COMMERCIAL FERTILIZER

CONSOLIDATED WITH THE FERTILIZER GREEN BOOK

AA Quality...

for over 85 years
a symbol of quality
and reliability

Mining phosphate rock at A.A.C. Mines, Pierce, Florida.

principal *AA Quality* products

All grades of Florida Pebble Phosphate Rock
AA QUALITY Ground Phosphate Rock
All grades of Commercial Fertilizers
Superphosphate — Sulphuric Acid
Insecticides and Fungicides
Phosphoric Acid and Phosphates
Phosphorus and Compounds of Phosphorus
Fluosilicates — Salt Cake
Gelatin — Bone Products
Ammonium Carbonate

The AMERICAN AGRICULTURAL CHEMICAL Co.

GENERAL OFFICE: 50 CHURCH STREET, NEW YORK 7, N. Y.

30 FACTORIES AND SALES OFFICES, SERVING U. S., CANADA AND CUBA—ASSURE DEPENDABLE SERVICE

Prompt Delivery of *Nacconol*®

THE LOW COST "CURE" ACCELERATOR

FROM NEARBY WAREHOUSE STOCKS

As little as one pound of *Nacconol*® per ton of Fertilizer

- Assists in keeping finished fertilizer free-flowing in the bag and in the curing bin
- Avoids the regrinding of lumped bagged goods
- Substantially reduces curing time
- Breaks the bottleneck of curing-bin capacity

What NACCONOL is

Nacconol is America's oldest low-priced, mass-produced synthetic surface-active agent. Millions upon millions of pounds of Nacconol have been used over the past twenty years.

How NACCONOL works

As little as one pound of Nacconol per ton of finished goods, accelerates the reaction between the super phosphate and the ammoniating solution . . . causes the batch to cure in much shorter time. And because the cure is more complete, "mixed goods" are free-flowing — in the bin — in the bag — in the fertilizer spreader. You cut costs in the plant, avoid regrinding of lumpy bagged material. Your farmer friends get a better product from every angle.

How NACCONOL is used

Dry Application:

Use Nacconol NR Flake or Dense Beads—the free flowing, non dusting types that disperse beautifully and uniformly. Add the required amount at the weighing hoppers or pre-mix with potash or other dry materials being used in the mixture. It is important that the Nacconol be distributed throughout the mix as thoroughly as possible.

Wet Application:

Use Nacconol NR Flakes or Nacconol Z Flakes—both readily dissolved in tap water. Where conditions permit, the required amount of either type of Nacconol may be dissolved and added directly to the mixer.

TIME TESTED • AVAILABLE NOW • BEST ALL-AROUND MONEY VALUE

Write, wire or phone our nearest office for price and delivery.

NATIONAL ANILINE DIVISION

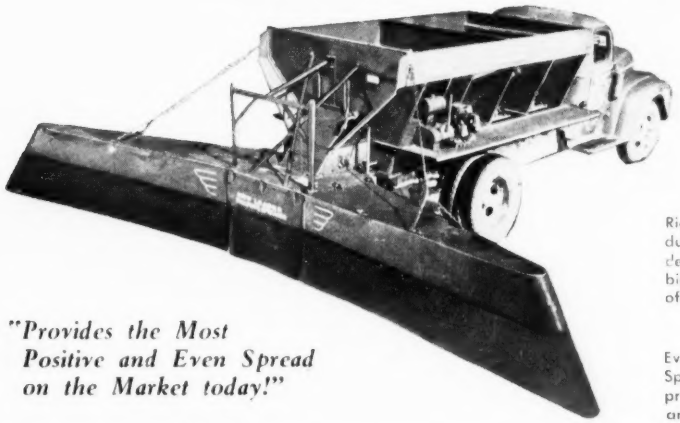
ALLIED CHEMICAL & DYE CORPORATION

40 RECTOR STREET, NEW YORK 6, N.Y. • BOwling Green 9-2240

Boston 14, Mass., 150 Causeway St.	CApital 7-0490	Richmond 19, Va., 8 North Fifth St.	Richmond 2-1930
Providence 3, R.I., 15 Westminster St.	DExter 1-3008	Columbus, Ga., Columbus Interstate Bldg.	Columbus 3-1029
Philadelphia 6, Pa., 200 204 S. Front St.	LOmbard 3-6382	Greensboro, N.C., Jefferson Standard Bldg.	GReensboro 2-2518
San Francisco 5, Cal., 517 Howard St.	SUtter 1-7507	Chattanooga 2, Tenn., James Building	CHattanooga 6-6347
Portland 9, Ore., 730 West Burnside St.	Beacon 1853	Atlanta 2, Ga., 254 E. Paces Ferry Rd.	EXChange 3594
Chicago 54, Ill., The Merchandise Mart	SUperior 7-3387	New Orleans 12, La., 714 Carondelet Bldg.	Raymond 7228
Charlotte 1, N.C., 201 203 West First St.	CHarlotte 3-9221	Toronto 2, Canada, 137-143 Wellington St. W.	Empire 4-6495

Allied Chemical

INCREASE YOUR SALES OF COMMERCIAL FERTILIZER AND LIMESTONE



"Provides the Most Positive and Even Spread on the Market today!"

by recommending the "New Leader" SPREADER *for Custom Spreading*

Right in your territory, there are men who can be induced to go into the business of custom spreading. Many dealers of commercial fertilizer and limestone are getting bigger sales volume through the aggressive promotion of the custom spreading idea.

URGE YOUR SALESMEN TO BE ON THE LOOKOUT FOR CUSTOM SPREADING PROSPECTS!

Every time you induce a man to buy a "New Leader" Spreader, you make a friend and a customer. He will promote the sale of commercial fertilizer and limestone and you will make a profit on the fertilizer which he buys from you.

"NEW LEADER" Scores 10 FIRSTS

1. The first successful truck mounted lime spreader that could handle stock-pile lime satisfactorily.
2. The first successful lime spreader with a chain conveyor.
3. The first lime spreader built with Twin Distributor Discs.
4. The first lime spreader with successful center dump.
5. The first lime spreader with a back endgate swinging wide open.
6. The first lime spreader with running boards or catwalks as standard equipment.
7. The first lime spreader with a 24" wide conveyor trough.
8. The first spreader with an all-steel frame and wooden hopper.
9. The first lime spreader with a successful attachment for spreading bulk or sacked commercial fertilizer.
10. And now! The first commercial fertilizer spreader with distributor discs driven at a constant speed by a separate motor. Conveyor chain positively synchronized with speed of rear truck wheels, assuring full width spread at all times and uniform distribution.

The Complete "New Leader" Line INCLUDES

- BULKMASTER
- LIMESTONE SPREADER
- SELF-UNLOADING BULK TRANSPORT
- TAILGATE SAND AND CINDER SPREADER
- HI-WAY MATERIAL SPREADER
- BULKMASTER, JR.
- COMB. COMMERCIAL FERTILIZER AND LIMESTONE SPREADER
- FEEDMASTER
- TRUCK MOUNTED SAND AND CINDER SPREADER

"New Leader" Spreaders spread a minimum of 100 pounds per acre, to any maximum desired up to 4½ tons per acre. Send coupon for free literature and name of your local distributor.

"NEW LEADER" SELF-UNLOADING BULK TRANSPORT

Penninsular Spreading Service of Kissimmee, Florida purchased three 33-ft. New Leader Self-Unloading Bulk Transports and two New Leader Fertilizer Spreaders for spreading fertilizer on pastures and in citrus groves. This 20-ton transport with elevator in place is ready to load a "New Leader" Spreader Truck. Eliminates demurrage on freight cars; gets fertilizer to the job quickly. Spreader trucks can stay in field as this is a complete self-unloading unit, leaving tractor free to return for another transport load. Unit divided into four 5-ton compartments. Each may be unloaded independently. Compartments and endgate removable for hauling bagged and packaged goods. Capacity 5 to 25 tons, 11 to 40 feet long.

HIGHWAY EQUIPMENT COMPANY, INC.

Manufacturers of the World's most complete line of Spreaders and Bulk Delivery Equipment

635 D Ave., N. W. Cedar Rapids, Iowa

Send full information on:

Spreader Bulk Transport

Bulkmaster Complete line

Name .....

Address .....

City ..... State .....

COMMERCIAL FERTILIZER

ESTABLISHED 1910

April, 1953

Vol. 86 No. 4

ADVERTISING INDEX

Published Monthly by

WALTER W. BROWN PUBLISHING CO., INC.

75 Third St. N. W., Atlanta, Georgia — Phone Atwood 4160

ERNEST H. ABERNETHY, *President*

BRUCE MORAN, *Editor* V. T. CRENSHAW, *Business Manager*

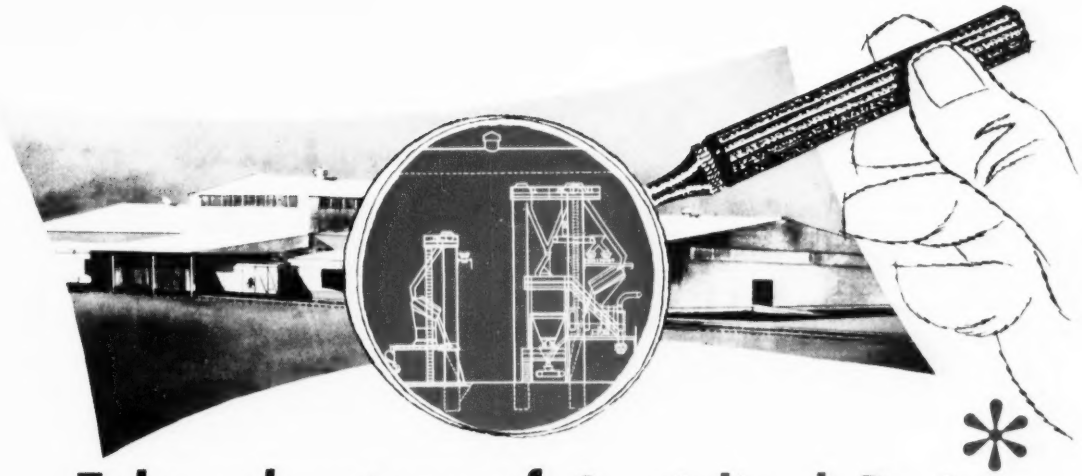
Subscription rates: United States, $3.00 per year; 5 years, $12.00. Foreign $5.00 per year.

In This Issue

Chicago Representative
ELON A. ABERNETHY
1323 S. Michigan Ave.—Room 400
Phone Harrison 7-3655

West Coast Representative
M. A. CALDWELL
2267 W. 24th St., Los Angeles, Cal.
Phone REPUBLIC 1-3050

COMMERCIAL FERTILIZER, entered as second class matter, October 12, 1910, at the post office at Atlanta, under the Act of March 3, 1879. Published monthly except semi-monthly in September, by Walter W. Brown Publishing Co., Inc., 75 Third St., N. W., Atlanta Georgia.



Take advantage of Specialized Design for your FERTILIZER PLANT

Many years of experience in the fertilizer industry have given the Harte Company valuable knowledge about the development and application of the fertilizer processes. Extensive study and research have made Harte engineers cognizant of the over-all picture of fertilizer plant design, realizing that certain fundamentals must be followed while specializing each plant. Chemical processes, machinery, mechanical operations, production facilities are carefully studied and adapted to fit the needs of each individual fertilizer plant.

The diversified experience and 'know-how' of Harte engineers are available to aid you in your fertilizer plant design. If you plan to build a fertilizer mixing plant, or an associated plant, the Harte organization can handle your complete job or any part from original design to an operating plant . . . anywhere, assuring economy and speed.

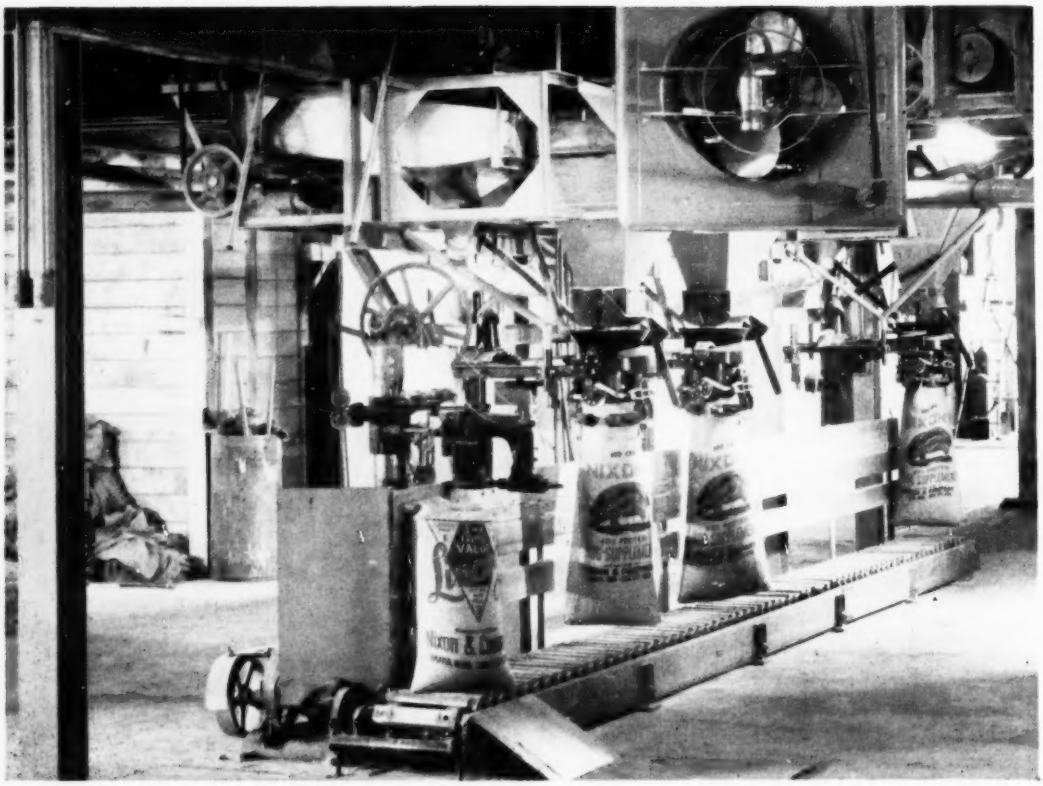
Harte Engineers are Specialists in:

- **Fertilizer Mixing Plants**
- **Triple Superphosphate Plants**
- **Single Superphosphate Plants**
- **Warehouses**
- **Granulating Plants**
- **Ammonium Sulphate Plants**
- **Storage Buildings**
- **Material Handling Systems**
- **Sulphuric Acid**
- **Phosphoric Acid**

ENGINEERS CONSTRUCTION MANAGERS

JOHN J. HARTE COMPANY

284 TECHWOOD DRIVE, N.W., ATLANTA • NEW YORK • HOUSTON • MEXICO, D.F. • HAVANA • SYDNEY, AUSTRALIA



Excellent illustration of the combined fill, weigh and check method. Three EXACT WEIGHT Sacking Scales are used.

THERE IS NO SUBSTITUTE FOR EXACT WEIGHT

What Is Sound Fertilizer Packaging?

A sound volume fertilizer packaging operation should require only normal labor expense . . . should eliminate any doub'e handling . . . rule out extra trimming and checkweighing . . . in fact cut handling costs everywhere possible. In EXACT WEIGHT Sacking Scales all of these factors have been incorporated in a single compact weighing unit for accuracy with speed of operation. With improved no-waste valves and newly designed bag holders these scales are better than ever. The fill, weigh and check method with but one man per scale is still the best combination for getting out the bags at the lowest cost. It's the easiest, cheapest and most efficient way . . . it's the EXACT WEIGHT Way . . . Write for full details covering the new models.

SALES and SERVICE
in all Principal Cities
from Coast to Coast
and Canada.

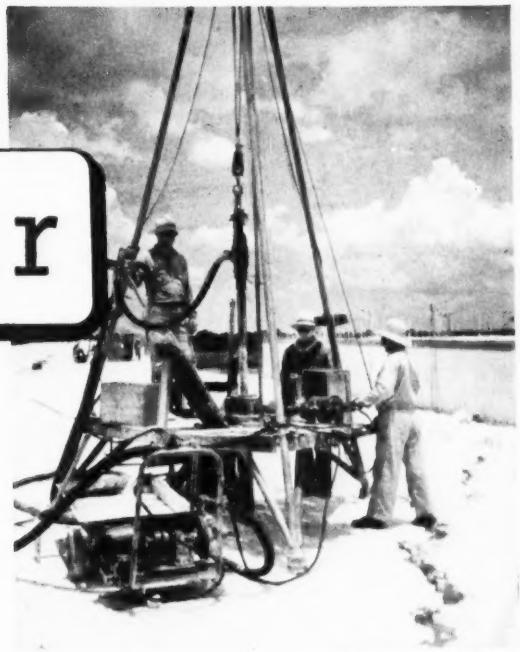
EXACT WEIGHT SCALES

BETTER QUALITY CONTROL
BETTER COST CONTROL

THE EXACT WEIGHT SCALE COMPANY

906 W. Fifth Avenue — **Columbus 8, Ohio**
2920 Bloor St., W — **Toronto 18, Canada**

Sulphur



Drilling a vat of Sulphur preparatory to blasting down

Thousands of tons mined daily, but where does it all go?

All through the open seasons—spring, summer and fall—homes everywhere are being painted, old houses as well as new getting much needed protection from the elements. It's an activity seen by millions but few realize how important Sulphur is to this phase of our domestic economy. Actually, it's an essential commodity.

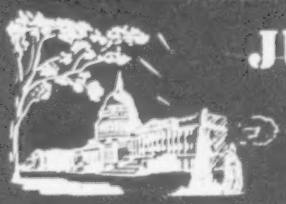
That's right. Paint pigments constitute one of the largest individual consumers of Sulphur . . . in the form of sulphuric acid. Government statistics show that for the year 1950 some 1,260,000 tons of 100% H_2SO_4 were consumed by producers of lead, zinc and titanium pigments. Translated into Sulphur, this means around 400,000 long tons which is a lot of Sulphur! In fact, the pigment industry stands 5th on the list of the many industries that consume Sulphur in one form or another during their manufacturing processes.

The Sulphur Industry indeed has many mouths to feed, all important to our economy and standard of living.

Texas Gulf Sulphur Co.

75 East 45th Street, New York 17, N. Y.

Mines: Newgulf and Moss Bluff, Texas



JUST AROUND THE CORNER

By Vernon Mount

MALENKOV MAY NEED A WAR to give himself the kind of hero build-up on which Stalin's position was founded. That is, if Malenkov lasts long enough to start a war. For he is surrounded by men who have a grip on the forces that in turn grip the Russian people:

BERIA, who has the secret police and the security troops
BULGANIN, whose Political Commisars herd the Army
ZHUKOV, who commands the Army itself

THE SATELLITE rulers who, unless they die of "Pleural Pneumonia With Complications," may have their own ambitions, and a shrewd idea they may not be able to satisfy them while under USSR domination. Tito set one example. Mao may soon set another.

BLOOD WILL FLOW, but it is likely first to flow in and around the Kremlin. And the blood-letting there will have an influence on whether or not war will follow--because it will then be a matter of who may need a war to preserve his slipping control.

WE'D BETTER STAY READY--despite all the peace-talk that comes out of Russia, and despite the polite tone of apologies for testing, probing around the rim.

Yours faithfully,

Vernon Mount

RAYMOND *MULTI-WALL*

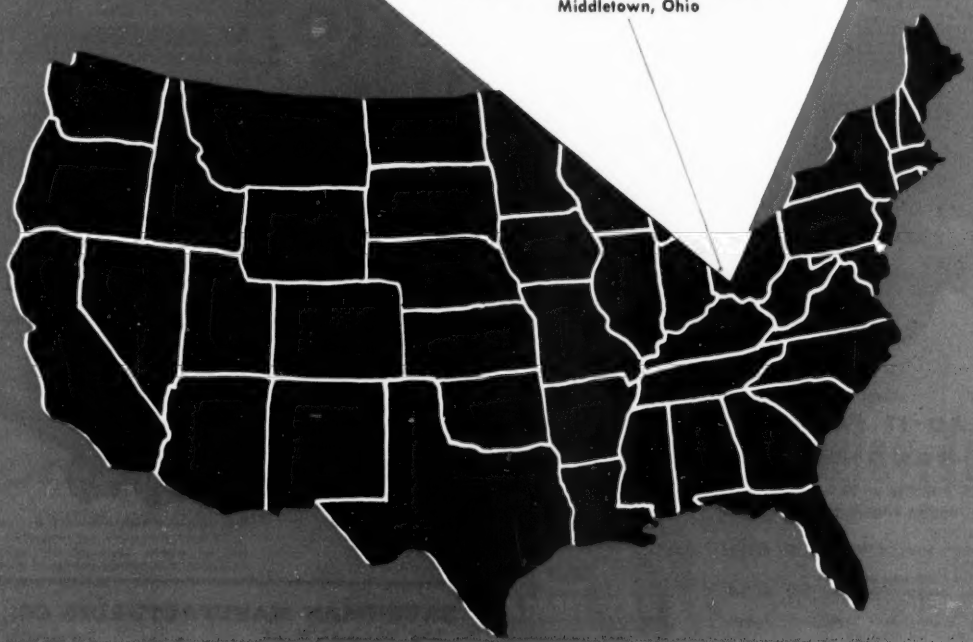
PAPER SHIPPING SACKS

are manufactured and shipped from one large plant in Middletown, Ohio . . . and Middletown is exceptionally well situated to serve the fertilizer producer, packer, and shipper.

Raymond Multi-Wall Paper Shipping Sacks are made in various types, sizes, and strengths. Available in one or more colors, or plain.

Raymond Multi-Wall Paper Shipping Sacks are CUSTOM BUILT for your requirements. They are dust-proof, sift-proof, and water-resistant. They cut your packing, handling, and shipping costs. These dependable Shipping Sacks protect your fertilizers all the way from packer to user. Wire, write, or phone Raymond today!

THE RAYMOND BAG COMPANY
Middletown, Ohio



POTASH & NITROGEN

Muriate & Sulphate **Sulphate of Ammonia**

We are in position to make prompt delivery of the above chemicals
Ask for quotations on these and other

FERTILIZER and FEED MATERIALS

- **Brokers**
- **Importers**
- **Commission Merchants**
- **Exporters**

1873 • 80th ANNIVERSARY • 1953

Woodward & Dickerson Inc.

1400 SOUTH PENN SQUARE, PHILADELPHIA 2, PA., U. S. A.
TELEPHONE: LOcust 4-5600 Cable Address: "Woodward" TELETYPE: PH 109

A FERTILIZER IS AS GOOD AS ITS APPLICATION...

Model ASK-3-6.

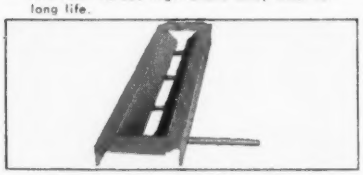
SPREAD IT *FASTER, CHEAPER, MORE UNIFORMLY* with BAUGHMAN *Hi-Speed* SPREADER BODIES

Model ASK-3-6. One of 13 basic Spreader Bodies in lengths from 9 to 33 ft. (5 to 33 tons).

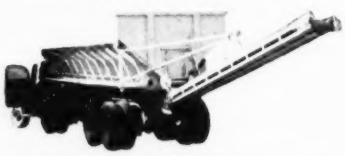
- High tensile steel (30% lighter for greater payload).
- Completely self-unloading.
- Finger-tip control from truck cab, at any speed.
- 3 Speed Transmission (optional), permits thin to heavy application.

BAUGHMAN "Better Spreader" ACCESSORIES

Fertilizer Spreader. Holds spread close to ground in 20-30 ft. path . . . reduces "wind-waste." Covers to 4 acres per mile at 15 MPH. All-welded high-tensile alloy steel for long life.



Split-Bottom Dump Attachment. Converts spreader to dump body. Full-length 4-in. opening for off-season hauling, dumping of cinders, aggregates, grains, etc.

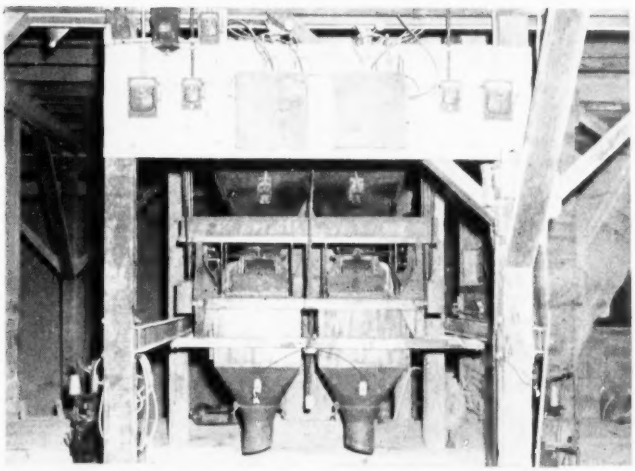


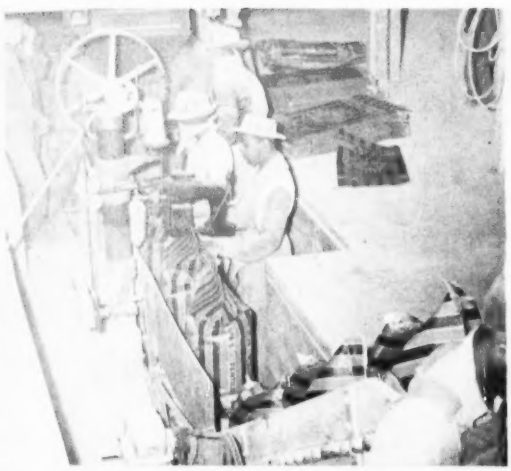
Bulk Transport Body—Model K-8. Capacity up to 30 tons. Automatic self-unloading at 1000 lbs. per minute. Equipped with conveyor for unloading directly into storage or stock-piling.

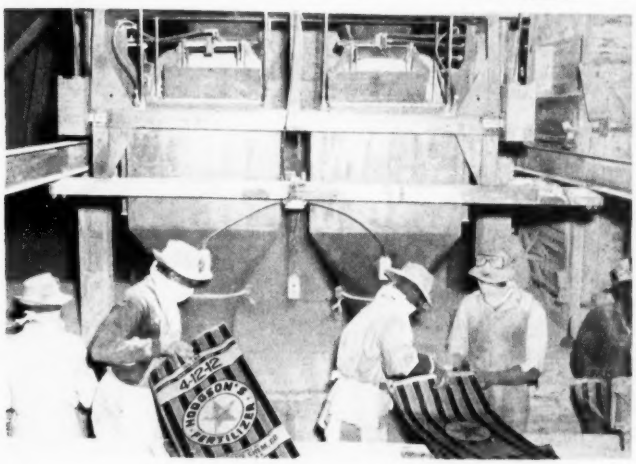
BAUGHMAN

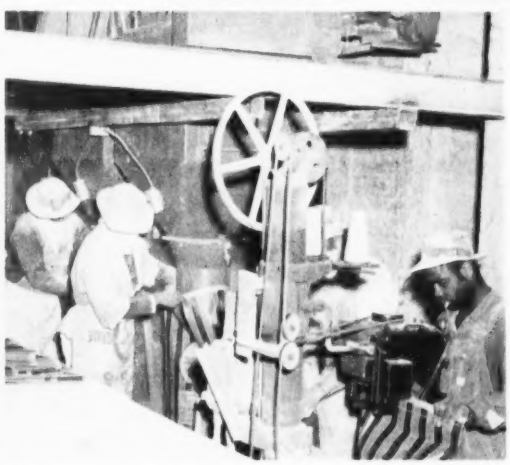
BAUGHMAN MANUFACTURING CO., Inc.
139 Shipman Road • Jerseyville, Ill.

50 TONS PER HOUR WITH ONE MAN WITH I&C'S NEW AUTOMATIC BAGGING UNIT*









Above pictures made at Empire State Chemical Co., Athens, Ga. Equipment shown produces 100 tons per hour with 2 operators.

- Get more tonnage with fewer men and less cost, with I&C units
- Get more accurate weights with less supervision, with I&C units
- Get more years of service with less maintenance, with I&C units

*Patent pending

Phone — wire — write

Inglett & Corley, Inc.

P. O. Box 247
AUGUSTA, GEORGIA
Telephone: 6-2228—21665

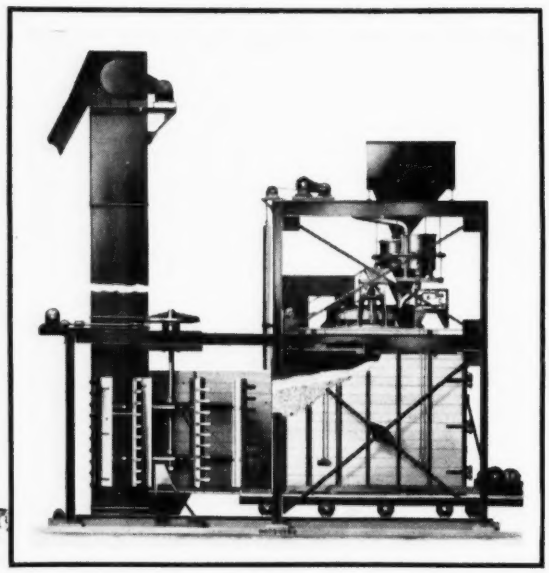
An Important Announcement

STURTEVANT
Continuous or Batch Den and Excavator

can be used either with sulphuric acid, phosphoric acid or a mixture of both, mixed with phosphate rock for producing superior superphosphate either single, enriched or triple . . .

QUICKLY and ECONOMICALLY!

Sturtevant Mill Company has been a leader in the design and manufacture of fertilizer equipment for over half a century. Its equipment has been cutting costs and increasing production the world over. You, too, can benefit with Sturtevant. The experience gained throughout the years is yours without cost or obligation. Write for the services of a Sturtevant trained fertilizer engineer, whether it be for individual equipment or the design of a complete plant. He can help you save time, increase tonnage.



Continuous Den or Batch Den and Excavator for producing superphosphate.

BUILDERS OF COMPLETE FERTILIZER PLANTS

STURTEVANT MILL Company

111 CLAYTON STREET, BOSTON 22, MASSACHUSETTS

CRUSHERS • GRINDERS • SEPARATORS • CONVEYORS • MECHANICAL DENS and EXCAVATORS • ELEVATORS • MIXERS

AVAILABLE NOW

Good news! Phillips *66* Ammonium Sulfate is available *now!* It is *dry-cured*. Dry-curing removes excess moisture—prevents caking. Uniform crystals flow freely—mix easily. Contains 21% nitrogen. Ideal for mixed goods manufacture and for direct application for all farm crops.

Contact us now for immediate shipment of bulk or bagged Phillips *66* Ammonium Sulfate.

Phillips also produces Nitrogen Solutions, Ammonium Nitrate, and Anhydrous Ammonia. Write our nearest district office for full information.

Phillips 66

PHILLIPS CHEMICAL COMPANY

A Subsidiary of Phillips Petroleum Company

FERTILIZER SALES DIVISION · BARTLESVILLE, OKLAHOMA

DISTRICT SALES OFFICES:

NORFOLK, VA.—610 Royster Bldg. • TAMPA, FLA.—7 Terrace Office Bldg.
HOUSTON, TEX.—604 City National Bank Bldg. • AMARILLO, TEX.—First National Bank Bldg. • OMAHA, NEB.—WOW Bldg.
PASADENA, CALIF.—604 Citizens Bank Bldg. • NEW YORK, N. Y.—80 Broadway • BARTLESVILLE, OKLA.—Adams Bldg.

How do you measure the look in a puppy's eye?

The preliminary precautions have been taken. A well-recommended kennel. A healthy litter. A breed that takes well to youngsters.

Now it's up to the boy to choose.

How will he decide? Perhaps by the look in a puppy's eye.

Chances are, you'll be buying Multiwalls soon again. You've done as every good buyer does. You've considered the reputation of the various suppliers. You've investigated the quality of their product. You've set down your specifications to the last fraction.

Now you pause to think again of the fellow who will make the final choice—your customer. How will he decide? One consideration may well be "the look in a puppy's eye." To say it another way, the sales appeal of your package.

Men who know Multiwalls . . . who buy more than 85 per cent of all Multiwalls made . . . give great weight* to good printing and design.

Union's art directors have concentrated experience. They know how to give your Multiwall package the look it needs to stand out among competition. Volume purchasers of Multiwalls recognize this. They are calling on Union for a greater share of their Multiwall needs.

More so every day . . .

IT'S UNION FOR MULTIWALLS

TRADE MARK UNION

*August, 1951 research study.

UNION BAG & PAPER CORPORATION • WOOLWORTH BUILDING, NEW YORK 7

THE LESSON OF TIMGAD

HISTORY tells us that more than one great civilization withered and died when its agriculture could no longer provide for the needs of its people. There is the story of the ancient Roman city of Timgad. Timgad was built in northern Africa in the year 200 A.D. It was a city of great symmetrical beauty with fine streets—a city of magnificent buildings embellished by carved stone columns and imposing statues. There were seventeen great public baths, built of marble and mosaic, in Timgad. There was a beautiful theatre that seated 2,500 people. It was a city of culture and boasted a splendid public library. On every side, carved stone and polished marble reflected the splendor that was the pride of the rich and prosperous people who lived there in great luxury.

Timgad was great and rich because it was the capital of a great agriculture. Beautiful fields of waving grain and olive groves stretched to the far horizons. Herds of livestock grazed contentedly and grew fat. This fertile, productive land supplied not only its own people in abundance, but it was the granary of the ancient Roman Empire as well. Then the overworked and neglected land lost its fertility and no longer produced its beautiful harvests.

The beauty of Timgad and the vigor and strength of its people began to decline. Finally, the city was lost, and buried in a sea of sand. Today, only its stark stone columns and the ruins of once great buildings stand as a grim warning that a city or a nation cannot long exist once its agriculture is lost.

I hope the story of Timgad will remind you, as it has me, of the responsibility that we have to save our own soil here in America.

I know that some people argue that what happened to Timgad could never happen here. They say we are modern now—we have modern machinery—we understand fertilization. But let's take a minute and look at the facts. Let us see just where we do stand.

We have about 465 million acres of productive land in the United States today. But we have already lost 100 million acres—100 million acres that are ruined to the point where they never can be returned to cultivation. An additional 100 million acres are badly damaged. That is not a pleasant picture and you can see that we do not dare shut our eyes to the fact that the rich and productive areas that were meant to be our eternal treasury are steadily slipping away — passing along right before our eyes—in the muddy streams and creeks and rivers that carry them on and on to the sea—never to return.

Today, we have only three acres left to support each of us. Our population is growing every day. There are 48,000 more mouths to feed in America this morning than there were a week ago this morning—and throughout the world, there are 500,000 more people to feed than there were last week. But, how many new acres of land came into production in the last seven days?

As long as we had new land we, like some of the people of ancient times, gave little thought to its care and preservation. When the land wore out, people moved on to new and richer soils.

Now, we are at the end of our rope. The new land, too, has just about run out and we have only one choice, that is to guard and save those precious acres that are left.

Excerpt from a talk given by Raymond C. Firestone, vice president Firestone Tire & Rubber Co., at the breakfast honoring the winners in the National Soil and Water Conservation Contest.

TABLE I
Summary of Data on Production of 11-11-11 Fertilizer

Item Location	50,000 Ton/Year Conventional Mixing Plant Sheffield, Alabama	 Chicago, Illinois	 Baltimore, Maryland	50,000 Ton/Year Nitric-Sulfuric Process Sheffield, Alabama	 Chicago, Illinois	 Baltimore, Maryland	200,000 Ton/Year Nitric-Sulfuric Process Sheffield, Alabama	 Chicago, Illinois	 Baltimore, Maryland
Plant Investment [1]	$1,000,000	$1,000,000	$1,000,000	$2,800,000	$2,800,000	$2,800,000	$6,450,000	$6,450,000	$6,450,000
Production Cost/Ton	$53.05	$53.15	$53.45	$45.11	$49.17	$48.25	$40.40	$44.44	$43.55
Return on Investment [2]	11.3%	11.1%	7.4%	9.6%	6.1%[3]	5.9%[3]	18.9%[3]	12.9%[3]	11.0%[3]

[1]/See Table III. [2]/Based on After-Taxes Profit. See Table VI. [3] Based on Charging No Premium for Having a Granular Product. See Table VI.

TABLE II
Nitric Acid Production Cost Estimate

Item	60 Ton Plant Quantity	$/Ton HNO_3 Sheffield, Alabama	 Chicago, Illinois	 Baltimore, Maryland	80 Ton/Day Plant Quantity	$/Ton HNO_3 Sheffield, Alabama	 Chicago, Illinois	 Baltimore, Maryland
Ammonia	0.287T.	$23.60	$27.80	$27.50	0.287T.	23.60	$27.80	$27.50
Electricity	260 KWH	1.30	2.92	3.38	260 KWH	1.30	2.92	3.38
Cooling Water	10,000 Gal @ $0.03/1000 gal	0.30	0.30	0.30	10,000 Gal @ $0.03/1000 gal.	0.30	0.30	0.30
Operating Labor	0.4 Man-Hr. @ $3.00	1.20	1.20	1.20	0.3 Man-Hr. @ $3.00	0.90	0.90	0.90
Maintenance		0.90	0.90	0.90		0.90	0.90	0.90
Catalyst		1.50	1.50	1.50		1.50	1.50	1.50
Depreciation	7% of $800,000	2.90	2.90	2.90	7% of $1,500,000	1.80	1.80	1.80
Property Tax and Insurance	2% of $800,000	0.80	0.80	0.80	2% of $1,500,000	0.50	0.50	0.50
Overhead		1.50	1.50	1.50		1.30	1.30	1.30
Chemical Control		0.20	0.20	0.20		0.20	0.20	0.20
Total		34.20	40.02	40.18		32.30	38.12	38.28

Herewith are summary tables containing estimated costs of production of an 11-11-11 grade nitraphosphate by the nitric-sulfuric method in 50,000 and 200,000 ton/year plants located at Sheffield, Alabama, Chicago, Illinois, and Baltimore, Maryland. Comparable estimates for the production of an 11-11-11 grade product by the conventional mixing process in a plant of 50,000 ton/year capacity are also included. Table I presents a summary comparing the economic indices for these processes and plants.

The nitric-sulfuric process modification was selected for initial study since it was believed that the modification would be of widest general interest to fertilizer manufacturers. It is felt that comparable studies would show some of the other modifications of the nitraphosphate process economically more attractive while others might prove to be less attractive depending on location and availability of raw materials.

It is believed that the nitraphosphate cost estimates presented herewith represent minimum estimates for the production of these materials. Since these estimates are based on the production of a 1-1-1 ratio product, it is believed that the nitraphosphate process was considered in its most favorable light considering its lack of flexibility in producing a varied number of grades without sacrificing the inherent advantages of the process. It is also believed that the production of such large quantities of a restricted number of grades of product might impose a marketing problem on the part of the producer.

The nitraphosphate estimates are based on purchased ammonia which is converted into nitric acid in a nitric acid plant operated in conjunction with the nitraphosphate processing plant. Nitric acid production cost estimates for plants of 60 and 180 tons per day capacity are given in Table II. The 60 ton per day plant would be operated in conjunction with the 50,000 ton per year nitraphosphate plant and the 180 ton per day plant would serve the 200,000 ton per year plant. Esti-

Nitraphosphate
PRODUCTION
COST ESTIMATES

This report presents estimated costs of producing an 11-11-11 grade nitrophosphate at plants located in Sheffield, Alabama; Chicago, Illinois; and Baltimore, Maryland. For comparison purposes, similar estimates for the production of an 11-11-11 grade product by the conventional mixing process are also presented.

The report is the result of a conference between a TVA technical committee and an NFA technical committee which jointly studied the estimated costs of producing an 11-11-11 product at Sheffield, Alabama, by the TVA nitric-sulfuric acid process. Estimates for the Chicago and Baltimore locations were subsequently compiled.

It should be noted that the figures presented are estimates for the locations listed; estimates for other locations may be computed from the process raw material and power requirements given.

The data presented should help clarify some of the economic considerations of nitrophosphate production.

---

mates were made for the latter plant because that plant size was believed by TVA to approach the economic optimum scale of operation. A summary of the estimated investment for the 50,000 and 200,000 ton per year nitraphosphate plants as well as the estimated investment for a 50,000 ton per year conventional mixing plant is given in Table III. Investment cost of storage facilities for the nitraphosphate plants are listed separately from the processing plant since no provision for these facilities was included in the original TVA estimate for the nitraphosphate plant.

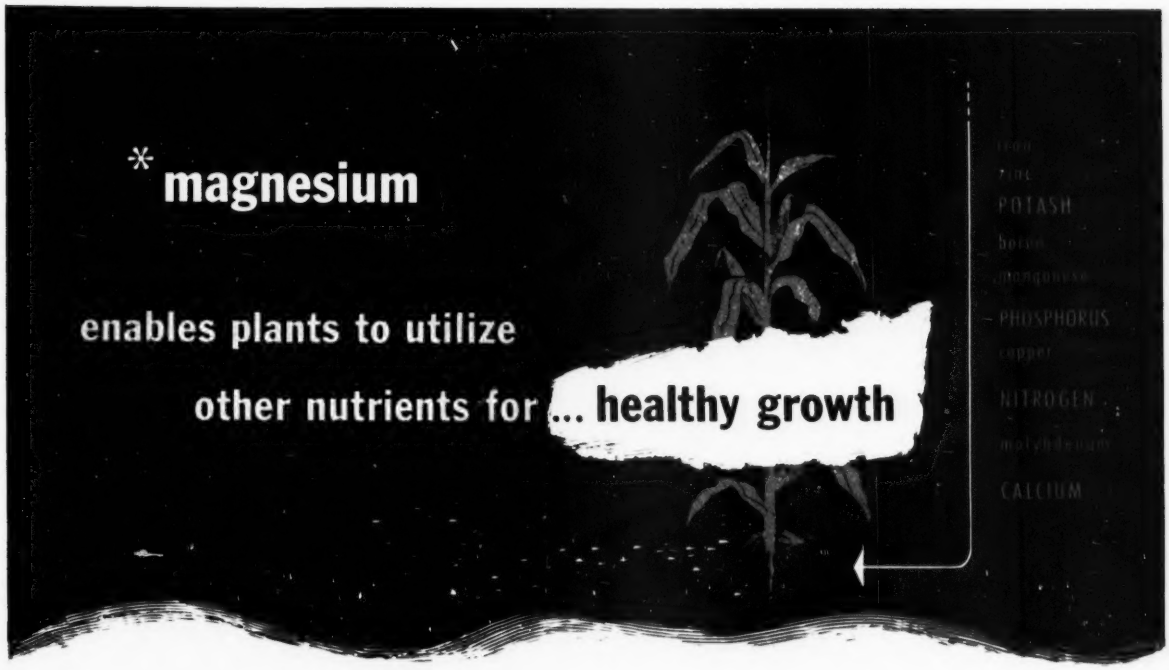
The estimated investment cost of $1 million for the conventional mix-

TABLE IV

Estimated Production Cost of 11-11-11 Fertilizer at Various Locations

Item	Conventional Mixing Process 50,000 Tons/Year: Quantity	$ Per Ton: Sheffield, Alabama	$ Per Ton: Chicago, Illinois	$ Per Ton: Baltimore, Maryland	Nitraphosphate Process 50,000 Tons/Year: Quantity	$ Per Ton: Sheffield, Alabama	$ Per Ton: Chicago, Illinois	$ Per Ton: Baltimore, Maryland	Nitraphosphate Process 200,000 Tons/Year: Quantity	$ Per Ton: Sheffield, Alabama	$ Per Ton: Chicago, Illinois	$ Per Ton: Baltimore, Maryland
Rock Phosphate					0.337T	4.52	5.23	3.80	0.337T	4.52	5.23	3.80
Nitric Acid					0.252	8.61	10.10	10.12	0.252	8.13	9.60	9.65
Sulfuric Acid					0.137	2.88	3.02	3.02	0.137	2.88	3.02	3.02
Ammonia					0.072	5.80	6.96	6.91	0.072	5.80	6.96	6.91
KCl	0.183T	6.71	6.50	6.92	0.189	6.91	6.71	7.15	0.189	6.91	6.71	7.15
$(NH_4)_2SO_4$	0.4	18.86	18.57	19.40	—							
Nitrogen Sol'n	0.075	4.38	4.41	4.26	—							
Triple Super.	0.168	9.25	9.43	9.29	—							
Normal Super	0.173	3.29	3.55	2.86	—							
Shrinkage	(1)	0.85	0.85	0.85	—							
Bags	20	2.68	2.68	2.68	20	2.68	2.68	2.68	20	2.68	2.68	2.68
Fuel	—	0	0	0	3,510M BTU	1.05	1.43	1.43	3,510M BTU	1.05	1.43	1.43
Electricity	—	0.10	0.23	0.26	60 KWH	0.30	0.68	0.78	60 KWH	0.30	0.68	0.78
Operating Labor	—	1.90	1.90	1.90	1.24 Man-Hr.	2.48	2.48	2.48	0.8 Man-Hr.	1.60	1.60	1.60
Lab. Analysis	—	0.05	0.05	0.05	—	0.33	0.33	0.33	—	0.33	0.33	0.33
Maintenance	7%	1.40	1.40	1.40	12%	3.60	3.60	3.60	12%	2.10	2.10	2.10
Yard Handling	—	0.20	0.20	0.20	—	0.20	0.20	0.20	—	0.20	0.20	0.20
Depreciation	7%	1.40	1.40	1.40	7%	2.10	2.10	2.10	7%	1.20	1.20	1.20
Misc. Supplies	—	0.05	0.05	0.05	—	0.10	0.10	0.10	—	0.10	0.10	0.10
Taxes and Insur.	(2)	0.63	0.63	0.63	(2)	0.80	0.80	0.80	(2)	0.55	0.55	0.55
Factory Overhead	—	1.30	1.30	1.30	—	2.00	2.00	2.00	—	1.30	1.30	1.30
Nitraphosphate Product Storage (3)	—	—	—	—	—	0.75	0.75	0.75	—	0.75	0.75	0.75
Total		$53.05	$53.15	$53.45	—	$45.11	$49.17	$48.25	—	$40.40	$44.44	$43.55

(1) 2% of Raw Materials Cost. (2) 2% of Plant Investment Plus Inventory. (3) Includes Depreciation, Insurance and Taxes, and Maintenance.



Include Soluble Magnesium in Your Quality Fertilizers

Sul-Po-Mag®
Water-Soluble
Double Sulfate of Potash-Magnesia

Magnesium is the basic metallic element in chlorophyll, the green plant substance which captures the sun's energy that is vital for life and growth.

Magnesium concentrates in the seed with phosphorus to aid in the formation of oils and proteins required for viable seed.

Magnesium functions as a carrier of phosphates to the actively growing and fruiting parts of the plant.

Magnesium is required to activate the processes which stimulate the production and transport of carbohydrates and proteins within the growing plant.

* Magnesium, in sufficient quantities, enables the plant to utilize other plant nutrients for healthy, disease-resistant growth.

Magnesium stimulates the growth of soil bacteria and increases the nitrogen-fixing power of legumes.

Plants, like people, can't have a healthy growth on a deficient diet. To supply all plant nutritional needs, fifteen chemical elements are required. Plants get these from the air, water, soil and fertilizer. A deficiency of only one element will stop plant growth regardless of how many other nutrients are available. A plant could literally starve in the midst of plenty. This is especially true when magnesium is lacking. For magnesium is required in large amounts for plants to utilize many other nutrients for vigorous disease-resistant growth.

Many soils are deficient in magnesium because of erosion, leaching, and heavy cropping. Whatever the cause of magnesium deficiency, this essential nutrient can be returned to the soil in available form by including soluble magnesium in the mixed fertilizer.

Sul-Po-Mag is a properly balanced combination of magnesium and potash—both in sulfate form, water soluble and immediately available to the crop. *Sul-Po-Mag* is the most practical and economical means of supplying soluble magnesium to growing crops. It helps give the plants a healthier start, hasten maturity . . . and increase yields and quality of tobacco, cotton, citrus, corn, small grains, potatoes, vegetables, legumes and other crops. You can obtain *Sul-Po-Mag*, produced exclusively by *International*, in bulk for your quality mixed fertilizers or bagged for direct application to the soil.

International Minerals & Chemical

MURIATE OF POTASH
SULFATE OF POTASH
SUL-PO-MAG

Mined and Refined at Carlsbad by International for Fertilizer Manufacturers

POTASH DIVISION

INTERNATIONAL MINERALS & CHEMICAL CORPORATION
General Offices: 20 North Wacker Drive, Chicago 6

TABLE VI

Estimated Return on Investment for Plants Producing 11-11-11 Grade Fertilizer at Various Locations

Item	Conventional Mixing Plant 50,000 Tons/Yr. Location			Nitraphosphate Plant 50,000 Tons/Yr. No Premium for Granular Product		
	Sheffield, Alabama	Chicago, Illinois	Baltimore, Maryland	Sheffield, Alabama	Chicago, Illinois	Baltimore, Maryland
Retail Price/Ton[1]	79.20	79.20	79.20	79.20	79.20	79.20
16% Dealer Cash Discount[2]	—12.60	12.60	12.60	12.60	12.60	12.60
	66.60	66.60	66.60	66.60	66.60	66.60
Freight Cost[3]/[4]	— 5.26	5.26	6.50	5.26	5.26	6.50
	61.34	61.34	60.10	61.34	61.34	60.10
Sales and Central Office Expense	— 3.00	3.00	3.00	3.00	3.00	3.00
	58.34	58.34	57.10	58.34	58.34	57.10
Interest—4% of Total Investment	— 0.80	0.80	0.80	2.24	2.24	2.24
	57.54	57.54	56.30	56.10	56.10	54.86
Production Cost	—53.05	53.15	53.45	45.11	49.17	48.25
Pre-Tax Profit/Ton	4.49	4.39	2.85	10.99	6.93	6.61
After-Taxes Profit/Ton[5]	2.26	2.22	1.48	5.38	3.43	3.28
Per Cent Return on Investment (Based on after Taxes Profit)	11.3%	11.1%	7.4%	9.6%	6.1%	5.9%

ing plant, on which the production cost estimates are founded, was based on the present day replacement cost of a mixing plant in operation in the Mid-West and which may be operated at a capacity of about 70,000 tons per year.

Production cost estimates for the manufacture of 11-11-11 grade fertilizer by the nitraphosphate and conventional mixing processes are given in Table IV. These estimates include cost of receiving raw materials, processing, storing, bagging and loading the product for shipment. The specifications and unit costs of the raw materials used in these estimates are presented in Table V.

A return on investment comparison for the plants and locations considered in this report is given in Table VI. In the case of the nitraphosphate products, return on investment has been calculated on the basis of charging no premium for having the product in a granular form and on the basis of adding a $2 per ton gross premium for the granular feature. The assumed retail price used in these calculations is based on the retail price of 10-10-10 in the Mid-West. The average freight costs are likewise assumed values as are the sales cost and central office expense items. The taxation rate used in these calculations is based on a 30 per cent normal tax on the first $25,000 of income and 52 per cent on all income above $25,000. No provision has been made for excess profits tax.

TABLE III

Summary of Investments

	50,000 ton Conventional Mixing Plant	50,000 ton Nitraphosphate Plant	200,000 ton Nitraphosphate Plant
Nitric Acid Plant	———	800,000[2]	1,500,000[3]
Fertilizer Plant	1,000,000[1]	1,500,000	3,450,000
Fertilizer Storage	———	500,000[4]	1,500,000[4]
Total	$1,000,000	$2,800,000	$6,450,000

1/Complete Plant—includes facilities for receiving, processing, storing, and shipping product. 2/60-ton/day nitric acid plant. 3/180-ton/day nitric acid plant. 4/No storage facilities provided in original TVA estimates.

TABLE V

Specifications and Unit Costs of Materials and Utilities Used in Estimates

Item	Specification	Delivered Price/Ton Sheffield, Alabama	Chicago, Illinois	Baltimore, Maryland
Rock Phosphate	Florida, 75% BPL	$13.40	$15.51	$11.25
Sulfuric Acid	100% H_2SO_4	21.00	22.00	22.00
Nitric Acid	From 60 T/Day Plant	34.20	40.02	40.18
(Produced at site)	From 180 T/Day Plant 100% HNO_3	32.30	38.12	38.28
Ammonia	82.5% N	82.00	96.68	96.00
Potassium Chloride	60% K_2O	36.60	35.50	37.80
Ammonium Sulfate	20.5% N	47.15	46.45	48.50
Nitrogen Solution	40.6% N	58.46	58.71	56.80
Triple Superphosphate	46% P_2O_5	55.00	56.13	55.20
Normal Superphosphate	20% P_2O_5	19.00	20.49	16.50
Bags	5-Ply (1 Asphalt Laminated Ply)	0.134/Bag	0.134/Bag	0.134/Bag
Fuel	Natural Gas	0.30/1000 Cu. Ft.	(1)	(1)
Electricity	Industrial	5 Mills/KWH	1.125c/KWH	13 Mills/KWH

TABLE VI

Estimated Return on Investment for Plants Producing 11-11-11 Grade Fertilizer at Various Locations

Nitraphosphate Plant 50,000 Tons/Yr. Premium for Granular Product[2]			Nitraphosphate Plant 200,000 Tons/Yr. No Premium for Granular Product			Nitraphosphate Plant 200,000 Tons/Yr. Premium for Granular Product[2]		
Sheffield, Alabama	Chicago, Illinois	Baltimore, Maryland	Sheffield, Alabama	Chicago, Illinois	Baltimore, Maryland	Sheffield, Alabama	Chicago, Illinois	Baltimore, Maryland
81.20	81.20	81.20	79.20	79.20	79.20	81.20	81.20	81.20
12.99	12.99	12.99	12.60	12.60	12.60	12.99	12.99	12.99
68.21	68.21	68.21	66.60	66.60	66.60	68.21	68.21	68.21
5.26	5.26	6.50	9.25	9.25	11.40	9.25	9.25	11.40
62.95	62.95	61.71	57.35	57.35	55.20	58.96	58.96	56.81
3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
59.95	59.95	58.71	54.35	54.35	52.20	55.96	55.96	53.81
2.24	2.24	2.24	1.29	1.29	1.29	1.29	1.29	1.29
57.71	57.71	56.47	53.06	53.06	50.91	54.67	54.67	52.52
45.11	49.17	48.25	40.40	44.44	43.55	40.40	44.44	43.55
12.60	8.54	8.22	12.66	8.62	7.36	14.27	10.23	8.97
6.16	4.21	4.06	6.10	4.17	3.56	6.88	4.94	4.34
11.0%	7.5%	7.2%	18.9%	12.9%	11.0%	21.3%	15.3%	13.4%

[1]Retail Price of 11-11-11 Based on Mid-West Retail Price of 10-10-10. [2]Assumed $2.00 Gross Premium for Having Product in Granular Form. [3]For Sheffield, Ala. Location Market Area and Consequently Freight Cost of Finished Product are Considered on a 125 Mile Radius for the 50,000 Ton/Year Plant and 500 Mile Radius for 200,000 Ton/Year Plant. Same Freight Rate Assumed for Chicago Location. [4]For Baltimore Location Freight Cost Per Ton is Assumed to be $6.50 for 50,000 Ton Plant and $11.40 for Product from 200,000 Ton Plant. [5]Based on 30% Normal Tax on First $25,000 of Income and 30% Normal Plus 22% Surtax on Income Over $25,000. [6]Does not Include Excess Profits Tax. [7]Estimated Average Cash Discount to Dealer.

RESEARCH COMMITTEE RECOMMENDS LONG-RANGE STUDY PROGRAM

A vigorous long range research program designed to obtain answers to 18 broad questions which constitute today's inventory of the most serious shortages in this nation's supply of agricultural knowledge, was recommended by the Agricultural Research Policy Committee.

The 18 questions (not listed in any order of priority or relative importance) to which the committee believes more satisfactory answers are essential if agriculture is to provide sufficient food, fiber and forest products for a growing population are:

1. How can we reverse the downward trend in the fertility of our soils?

2. How can we increase the contribution of our forest, range, and water resources to local and national prosperity?

3. How can farm work be made more productive by use of power, equipment and efficient work methods?

4. Can we discover basic principles of life and growth and thus improve our plant and animal resources for human use?

5. How can we improve the nutrition of plants, animals and humans by better use of soil resources, fertilizers and feeds?

6. How can we increase yields and improve the quality of our plant and animal products by scientific breeding?

7. How can we eradicate or minimize losses from recurring epidemics of animal, crop, and forest diseases?

8. How can we prevent the waste caused by destructive insects?

9. How can research help farmers to organize and manage their farms for profit and income stability?

10. How can farmers obtain the capital needed to own, operate and improve their farms?

11. How can rural families achieve more healthful and satisfying home and community living?

12. What are the basic characteristics of farm commodities and how can we utilize them in new and improved products.

13. How does kind, quality, and amount of food affect human health?

14. How can we reduce spoilage and loss of product quality between the farm and the consumer's table?

15. How can processing and marketing costs be reduced to benefit producers, market operators and consumers?

16. How can we provide market information needed by producers, traders, and consumers for intelligent selling and buying?

17. How can we reduce the agricultural maladjustments caused by changing conditions?

18. How can we reduce the lag-time between the findings of research and their widespread use?

The committee noted that none of these 18 questions is new, and that research has already developed partial answers to each one. But, the committee pointed out the need for new technology is such that neither these partial answers, nor current progress toward more complete answers is satisfactory.

'52-53 FERTILIZER SITUATION-SUPPLEMENTARY

A Fertilizer Staff Report—Prepared By L. G. PORTER and M. M. JOHNSON
Production & Marketing Administration, U. S. Department of Agriculture

This supplemental report reflects changes in the 1952-53 fertilizer supply estimates which were contained in the report issued in September, 1952.*

The revised estimate of the quantity of the three primary plant nutrients — nitrogen, phosphate and potash — for the 1952-53 season is 5.815 million tons, representing an increase of approximately 11 per cent over the 1951-52 total of 5.245 million tons.

Nitrogen (N)

The revised 1952-53 estimated supply of nitrogen (N) is 1.660 million tons, representing an increase of 4.7 per cent over the September, 1952 estimate and 16.5 per cent more than the 1951-52 supply. Details for 1952-53 are shown in Table 1.

Phosphates (P_2O_5)

The revised 1952-53 estimated supply of phosphates in terms of available phosphoric oxide (P_2O_5) is 2.410 million tons, representing a 2.2 per cent decrease from the earlier estimate, but remaining above the 1951-52 supply by nearly eight per cent. Details for 1952-53 are shown in Table 2.

Potash (K_2O)

The revised estimated 1952-53 supply of potash in terms of potassium oxide (K_2O) is 1.745 million tons. Although reflecting some decrease from the earlier forecast, the revised estimate is about 10 per cent more than the 1951-52 supply. Details for 1952-53 are shown in Table 3.

A report based upon trade deliveries of nitrogen, phosphates, and potash during 1952-53 and a forecast of the 1953-54 supply is scheduled to be issued after the close of the current season.

Table 1.—NITROGEN* Estimated 1952-53 supply for fertilizer purposes, United States and possessions
In tons of 2,000 pounds nitrogen (N)

Source	Ammonium nitrate [1]	Ammonium sulfate [2]	Other solids [3]	Natural organics [4]	N solutions compound [5]	NH_3 for ammoniation [6]	NH_3 for direct application [6]	Total by source
U. S. production								
Synthetic ammonia	265,000	175,000	110,000	———	335,000	25,000[7]	255,000	1,165,000
By-product ammonia	———	180,000	———	———	———	———	———	180,000
Natural organics	———	———	———	35,000	———	———	———	35,000
Total	265,000	355,000	110,000	35,000	335,000	25,000	255,000	1,380,000
Exports	1,000	32,000	10,000	1,000	16,000	———	———	60,000
Net domestic production	264,000	323,000	100,000	34,000	319,000	25,000	255,000	1,320,000
Imports	131,000	59,000	145,000	5,000	———	———	———	340,000
Total supply								
U. S. and possessions	395,000	382,000	245,000	39,000	319,000	25,000	255,000	1,660,000
Per cent (increase or decrease) of Sept. 1952 estimate								+4.7
Per cent (increase or decrease) of 1951-52 supply								+16.5

For the purpose of this tabulation the following groupings have been made: [1]/Includes estimated ammonium nitrate, fertilizer grade, ammonium-nitrate limestone mixtures, and ammonium sulfate-nitrate. [2]/Includes estimated ammonium sulfate content of imported and exported mixed fertilizers. [3]/Includes estimated ammonium phosphates, sodium nitrate, urea mixtures, calcium nitrate and cyanamid. [4]/Estimated nitrogen content of natural organics used in commercial fertilizer. [5]/Includes estimated nitrogen content derived from solutions and ammonia in exported ammoniated superphosphates and mixed fertilizers. [6]/Includes compound nitrogen solutions and ammonium nitrate solutions used for this purpose. [7]/Includes a small quantity of aqua ammonia.
*Revised.

Table 2.—Phosphate* Estimated 1952-53 supply for fertilizer purposes, United States and possessions
In tons of 2,000 pounds available phosphoric oxide (P_2O_5)

Source	Normal superphosphate	Concentrated superphosphate	Other[1]	Total by source
U. S. Production	1,775,000[2]	475,000	210,000	2,460,000
Exports	64,000	9,000	7,000[3]	80,000
New supply, U. S. production	1,711,000	466,000	203,000	2,380,000
Imports	1,000	1,000	28,000[3]	30,000
Total supply, U. S. and possessions	1,712,000	467,000	231,000	2,410,000
Per cent (increase or decrease) of September, 1952 estimate				—2.2
Per cent (increase or decrease) of 1951-52 supply				+7.8

[1]/Includes estimates for complex phosphatic materials. [2]/Includes wet-base goods. [3]/Includes P_2O_5 content of prepared phosphatic mixtures, ammonium phosphates and ammoniated superphosphates.
*Revised

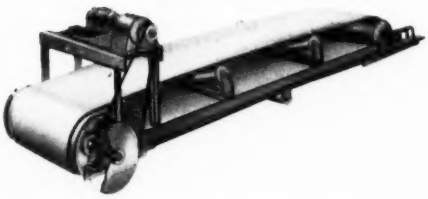
Table 3.—POTASH* Estimated 1952-53 supply for fertilizer purposes, United States and possessions
In tons of 2,000 pounds potassium oxide (K_2O) content

Source	Muriate of potash 60% and 50% grade [1]	Sulfate of potash & sulfate of potash magnesia	Manure Salts	Miscellaneous & by-product materials [1]	Total by Source
Deliveries from U. S. production	1,482,000	99,000	2,000	39,000	1,622,000
Exports	47,000	6,000	———	4,000	57,000
Net supply—U. S. production	1,435,000	93,000	2,000	35,000	1,565,000
Imports	150,000	22,000	———	8,000	180,000
Total supply, U. S. and possessions	1,585,000	115,000	2,000	43,000	1,745,000
Per cent (increase or decrease) of September, 1952 estimate					—5.7
Per cent (increase or decrease) of 1951-52 supply					+10.1

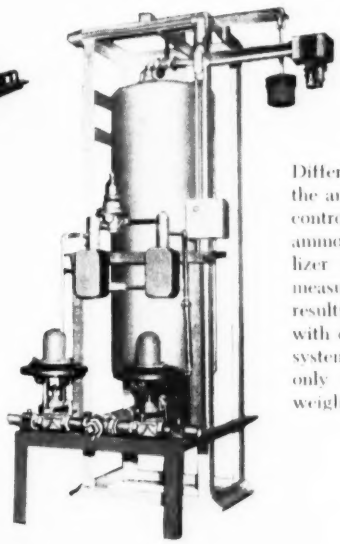
[1]/Includes potash content of oilseed meal and by-product residues used for fertilizer, potassium nitrate and calculated potash content of mixed fertilizers, exported and imported.

FERTILIZER MACHINERY

D-K CONVEYORS

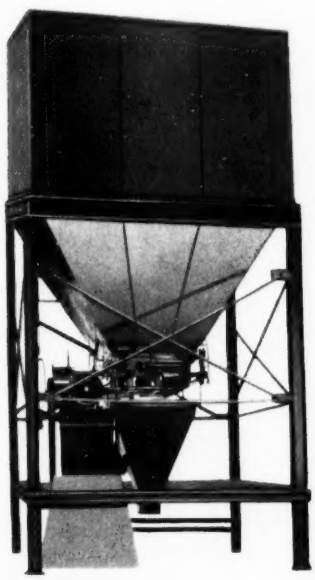


Custom made to individual requirements. D-K Conveyors are constructed with anti-friction bearings and quality components. Each device is specifically designed for a particular operation with flat surface of troughing belts either stationary or shuttle type. Characteristic D-K construction features easy maintenance and adjustment.



D-K AUTOMATIC SOLUTION TANKS

Different only in the materials used and in the amount of pressure they are designed to control, these tanks are for adding anhydrous ammonia or nitrogen solution to the fertilizer batch in the mixer. Solutions are measured by weight rather than by volume resulting in a more accurate measure even with changing temperature conditions. The system is entirely automatic and requires only one operator who also operates the weight hopper and mixing unit.



D-K ELEVATORS

Designed for easy adjustment and maintenance, D-K Elevators feature conveniently located clean out doors and readily accessible take-ups. Easily removable inspection doors are provided in the discharge chute and discharge head. Leg sections are fabricated in ten foot sections with ends bolted to side pieces for easy erection and repair.

D-K CLUSTER HOPPER

Normal operation of the D-K Cluster Hopper requires only four men . . . two men operating payloaders, one man operating swivel chute and one man weighing. Bins are available in 6, 9 or 12 bin clusters of 5 ton or 10 ton capacities to meet customer requirements. Valves to discharge individual bins are hand operated. The system is strong, simple, fast, easy to operate, and gives a very accurate control over the flow of material.

Manufacturers, Engineers and Designers of Complete Fertilizer Plants and Equipment

DAVIDSON-KENNEDY CO.

P. O. Box 97 **Station D**

ATLANTA, GA.

FROM THE MIDWEST SOIL MEETING

Disposition of FUTURE Output

By W. R. Aldstetter, NFA

Your able secretary has assigned me the topic—"Disposition of Proposed Future Fertilizer Output." That is quite a subject. To do justice to it the speaker should be endowed with clairvoyant power. Not being so endowed, I can only touch on a few factors which will undoubtedly influence the manner in which the increased fertilizer supplies will be utilized.

Larger quantities of fertilizers have already been mentioned. So let's take a look at the estimates as to the fertilizer supplies for the years ahead. I used the word "estimates" advisedly. The figures may need modification from time to time. They are, however, the best currently available:

	Estimated 1951-1952 Consumption	Estimated 1952-1953 Supplies	USDA Production Goal For 1954-1955
Nitrogen	1,425,000	1,585,000 (up 11%)	2,185,000 (up another 38%)
Phosphate	2,235,000	2,465,000 (up 10%)	3,485,000 (up another 41%)
Potash	1,585,000	1,850,000 (up 17%)	2,185,000 (up another 17%)

Equally as interesting is the fertilizer ration of these plant foods in the over-all picture. The ratio has been flattening out. From a ratio of 1—3.2—1.6 in 1930, the ratio has moved down to a 1—1.6—1.1 in 1952. If the intended production of fertilizers takes place and is used, the ratio will remain about the same nationally—but not in the Midwest, as I will try to show in a moment.

it appears likely that recommended rates of applications and farmer use of fertilizers will move up faster in the Midwest than in any other part of the nation. This is reflected in the U. S. Department of Agriculture estimates of 1954-55 usage of the three major plant nutrients in the 11 midwestern states as compared with 1950-51 usage in that area:

	1951 Consumption	1955 Estimated Consumption	Per Cent Increase
Nitrogen	208,000	632,000	204
Phosphate	660,000	1,190,000	80
Potash	478,000	829,000	73

These midwestern predicted consumption figures and similar estimates from other parts of the country were used to make up the USDA fertilizer production goals mentioned above.

What is the opportunity for disposing of this fertilizer nationally and in the Midwest? By opportunity, I refer to the gap between what amounts farmers are using and what amounts are being recommended by Land-Grant Colleges. For the answer let's look at some specific cases. We will have to be content with figures for 1950 but they will give us an idea as to the gap existing between recommendations and actual farm usage. I am confident that the gap is greater today than it was two years ago. I know it is much greater in some states.

1950 Actual Fertilizer Use In U. S. vs. Recommendations

Crop	Lbs. Used/Acre	Recommended Lbs. Acre
Corn	113	244
Cotton	203	351
Wheat	50	101
Grasslands	22	158

If the recommendation-use gap were closed overnight, which, of course, won't happen, farmers in 1955 would use far more fertilizer than will be available. For example, instead of the 4,800,000 tons of fertilizer used on corn in 1950, farmers would use 10,500,000 tons on this crop alone. Usage on cotton would be 3,300,000 tons instead of 1,900,000 tons. Likewise, farmers would apply 3,000,000 tons of fertilizer on wheat, twice the amount used on this crop. However, the really big potential for increased fertilizer usage lies in efficient pasture fertilization. Farmers have been slow to adopt modern fertilizer practices on pastures in spite of the fact that experiment after experiment and hundreds of farm demonstrations show pasture fertilization pays big dividends. We'll talk more about dividends later. The fertilizer potential is my theme for the present. In 1950, only 920,000 tons of fertilizer went on pastures. This amount is less than 16 per cent of the amount recommended as being the most profitable by the Land-Grant College agronomists. Had farmers followed the agronomists' recommendations, 6,200,000 tons of fertilizer would have gone on pastures alone.

We have said that the opportunity for fertilizer expansion is the difference between what the colleges are recommending and what the farmers are doing. College recommendations are based upon research. Our opportunity is thus created by research, and the extent to which our opportunity expands depends on the time, money and facilities devoted to research and the dissemination of the knowledge derived from research.

In other words, the future opportunities for the fertilizer indus-

try are dependent upon the resources of the Soils and Agronomy Departments of the Land-Grant Colleges. And inevitably this dependence of our industry upon college research will increase as time goes by.

Putting it very bluntly, it is to the direct interest of this industry to do everything in its power to see that adequate and increased personnel and facilities are made available to Soils and Agronomy Departments. I submit that it is a proper function for us both as individual companies and as trade associations to support these departments aggressively and continuously in every way possible.

Of course, the man who will finally decide what will be done with the new fertilizer production will be the farmer himself. He will use fertilizer if he thinks its use will make money for him and if he can finance its purchase. For him, crop response is only part of the story. Such data, of course, furnish the basis for making the dollar-and-cents calculations. The fact remains, however, that the dollar response is what the farmer wants to know. Dollar response is the primary interest of the farmer, the landlord, and the banker.

Dr. Malcolm McVickar, NFA agronomist, has worked out, with the help of the agronomist at Ohio State University, some data showing what the average yields would have been for 1949-51 had farmers in that state followed the college fertilizer recommendations. These data are shown below:

	Fertilizer Used Lbs. A	Fertilizer Recommended Lbs. A	Acre Yields Harvested	Acre Yields Possible
Corn	228	700	51.3 bu.	72.8 bu.
Wheat	244	550	24.4	28.9
Oats	128	450	37.3	51.3
Hay	55	250	1.5 tons	2.58 tons
Potatoes	1080	1500	218 bu.	273 bu.

Crop	Unit	Cost of Fertilizer	Avg. Acre Loss*
Corn	Bushel	$ .66	$18.06
Wheat	Bushel	1.17	5.98
Oats	Bushel	.69	1.54
Potatoes	Bushel	.28	71.50
Hay	Ton	6.39	14.70

*Based on attainable yield

It Seems to Me

by BRUCE MORAN

In a farm paper I saw a Spencer Chemical ad whose headline read: "Increase the size of your farm UP-AND-DOWN". That struck me as the very epitome of all we have been saying in this industry for a long time. There is no need for a farmer to reach out and buy more acres (whose price may fall) when he has not brought his corn fields—to name just one example—to the 100-bushel level. He can increase his crop "up-and-down" instead.

There is no need to reach out for more land when the soil is not up to par on the land you now own.

There is no need if weeds and insects and blights are taking a toll of the crop as it pokes its tender head up through the earth. Pesticides, too, are part of the "up-and-down" growth of a farm.

And there is surely no need to buy the neighboring land, unless one is prepared to farm it efficiently, with all that the farm implement people offer in the way of mechanized planting, application and cultivation equipment.

Let's join Spencer in preaching vertical development before horizontal expansion is undertaken!

Would it have paid the Ohio farmers to have followed the Ohio State fertilizer recommendations? The answer is "Yes," spelled with a capital Y and underscored several times.

The additional bushels of corn which could have been harvested would have come at $.66 per bushel, the wheat at $1.17 per bushel, and the hay at $6.39 per ton. To put it another way, the farmers in Ohio, and their usage is above average, are losing some $59,000,000 in corn, $12,000,000 in wheat, $1,500,000 in oats, $20,000 in sugar beets, $2,200,000 in potatoes, and $20,000,000 in hay—in net profits.

Ohio has been used as an example simply because the data are available. The picture would be much the same regardless of the state we might choose.

I asked Dr. McVickar to calculate the average cost of production in Iowa of the extra bushels of corn that could come from using recommended amounts of fertilizer. I asked him to make the most conservative possible estimate that the data would permit, and I must say he went all out to do just that. Nevertheless, the extra corn would only cost the farmer $.78 a bushel as compared with about $1.00 a bushel for the cost of production for average yields. Most of the midwestern data I have seen has indicated the unit cost of production for the extra bushels would be more nearly $.50.

(Continued on page 58)

FROM THE MIDWEST SOIL MEETING

Time of FERTILIZER Application[1]

JOHN PESEK[2]

When time of application of fertilizer is discussed, it must be considered from two different viewpoints, first, for systems of soil management wherein rather large quantities are applied at certain intervals in rotations, or on areas of permanent vegetation, and second, in those cases where smaller quantities are applied more frequently, and often annually. In the first case, it is considered that the soil is fertilized, as contrasted to fertilization of the current crop in the second. It is not necessary to enumerate the advantages and disadvantages of each procedure at this time.

Closely related to the time and frequency of application are the rates which should be applied and the method of application. The former vary, not only because different soils vary, but also because the economy is continuously changing. The method of application, or the placement, is rather intimately related with rates, time of application, and crops grown.

This discussion will first consider the results of experiments relating to time of application in a rotation, and then those data on fall and spring applications for a particular crop. The related factors of rate and method of application will also be considered where data are available. It is recognized that sources of the mineral elements are also a very important factor in their utilization, especially in case of phosphorus. Since this subject is so extensive, it will not be considered here.

Rate And Frequency Of Applying Superphosphate In A Rotation

An experiment was initiated in 1947 to study the effect of the rate and frequency of applying superphosphate in a rotation upon the yields of the crops in the rotation. The soil was a very phosphorus deficient calcareous Ida silt loam well supplied with potassium, and a four year rotation of corn, oats, and two years of alfalfa-brome meadow was followed. The rates used are given in table 1, together with the crop in the rotation receiving the phosphate fertilizer. You will notice that the application of 120 pounds of P_2O_5 per acre is (1) all on the oats, (2) split in half between the oats and second year meadow, or (3) split between the oats and corn. The yields are the average of the three seasons from 1950 through 1952.

All crops in the rotation responded to phosphate. Oats responded very little above the 60 pound application of P_2O_5, however in the case of corn and the meadow, the additional increments caused large increases in yield. The trend of the data indicates that the maximum yield possible had not been attained even when an application of 1200 pounds of 0-20-0 was made.

Table 1. Yields of various crops in a four year rotation as affected by time and rate of applying superphosphate

Treatment (Lbs. P_2O_5 Acre) on:				Average Yields (1950-52)				
		Meadow			Oats	Meadow (Tons/Acre)		
Corn	Oats	1st Year	2nd Year	Corn Bu. A	Bu. A	1st Year	2nd Year	Total
0	0	0	0	24.5	20.2	0.5	0.7	1.2
0	60	0	0	39.0	44.1	2.2	1.7	3.9
0	120	0	0	51.8	47.4	3.4	3.0	6.4
0	240	0	0	76.6	47.4	3.6	4.0	7.6
0	60	0	60	60.8	39.9	2.6	3.6	6.2
60	60	0	0	68.2	40.4	3.2	2.6	5.8

The effect of the time of applying phosphate in the rotation is the most interesting study in the experiment. In case of the meadow, there was very little difference in the total yield so long as all the phosphate was applied to the oats or split between the oats and second year meadow. In the latter case the second year meadow produced considerably more forage than the first, while the opposite was true when all the superphosphate was applied to the oats. The yield of the two years of meadow was about one-half ton less when the phosphate application was split between the corn and oats. Time of application in the rotation has an even more striking effect upon the yield of corn. When 120 pounds of P_2O_5 per acre were applied to the oats, three years previous to the corn crop, it yielded 51.8 bushels per acre, or 27.3 bushels above the check. When half of the phosphate went on the oats three years previously, and half on the meadow only one year previously, the yield was 60.8 bushels per acre or a 9 bushel return simply for splitting the application. An even better split was one which supplied 60 pounds of the P_2O_5 directly to the corn. This treatment yielded 68.2 bushels, or gave a return of 17.4 bushels per acre as a result of dividing the application.

These data indicate that it would be best to split an application of 120 pounds of P_2O_5 per acre between the oats, and either the second year meadow, or the corn. Under the present price relationships, half of it should be applied to corn. When

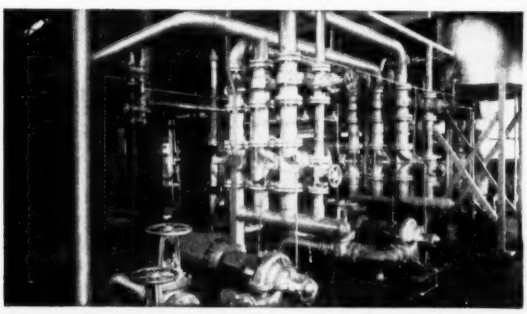
[1]—The data presented or cited are those of the Iowa Agricultural Experiment Station. They were collected through the efforts of several former and present members of the staff including: Lloyd Dumenil, H. R. Meldrum, L. B. Nelson, W. H. Allaway, George Stanford, A. J. Englehorn, R. P. Nicholson, John Webb, and W. H. Pierre. Their contribution is hereby gratefully acknowledged. The part played by Frank Shaller of the Soil Conservation Service is also recognized.

[2]—Associate Professor in Agronomy (Soils), Iowa State College, in charge of soil fertility research at the Iowa Agricultural Experiment Station.

W. L. Waring, Jr., is president of Lyons. Other executives include J. C. Wolfe, R. G. Nelson, W. F. McLane.

Since 1924 citrus and vegetable growers of Florida have looked to Lyons Fertilizer Company for *Orange Belt* brand fertilizer. Located in Tampa, this modern Lyons plant produces 50,000 tons annually. This entire output is utilized within Florida, particularly the southern portion.

Lyons Fertilizer Company
. . . Another Spensol User



From plants like this, Spensol (Spencer Nitrogen Solutions) is shipped direct to your plant siding. Dependable service and quality have made Spensol the choice of many of America's famous mixers.

These technical service experts specialize in finding the right answer to your production problems — even if you are not a Spencer customer. There is no charge or obligation for this Spencer service.

SPENCER

SPENCER CHEMICAL COMPANY, Dwight Bldg., Kansas City 5, Mo.
Southeastern District Sales Office: 412 Candler Bldg., Atlanta, Ga.
Works: Pittsburg, Kansas; Henderson, Ky.; Chicago, Ill.; Vicksburg, Miss. (under construction)

America's Growing Name in Chemicals

the price relationship between corn and hay changes enough in favor of the hay, then the hay, and not the corn, should receive half of the split application.

Another experiment which indicates the possibility of making large initial applications of phosphate was started in 1946 on Webster silty clay loam pH 7.9, and very low in available (Bray) phosphorus. The treatments and yields are shown in table 2.

In this case there again was a large response to phosphorus by all crops, and over the period of six seasons, the highest rate of application gave the greatest return per acre due to fertilizer. This is important because on the basis of one year's work (the oats) the results show that one would hardly be justified in going as far as the 60 pound application. This experiment illustrates how it is possible to move from one level of fertility to a higher one if sufficient capital is available. Other work indicates that this may be done in steps, thus making it possible to take the next step by investing part of the profits from the previous one. The capital position of the individual operators, rental arrangements, other enterprises in which the capital could be invested, and additional factors would help determine the route to increased soil fertility.

Table 2. Effect of rates of superphosphate upon the yields of oats, alfalfa and corn growing on Webster silty clay loam.

Treatment Lbs. P_2O_5/A	Oats—1946 Bu./A	Alfalfa 1947-49 Tons/A[1]	Corn Bu. A 1950	1951[2]
0	52.0	2.43	68.7	57.6
30	62.4	3.02	70.7	64.6
60	65.2	3.35	71.3	66.0
120	64.3	4.85	74.7	70.0
240	64.8	5.63	86.7	71.2

[1] Alfalfa total of first two cuttings in 1947, and first cuttings in 1948 and 1949. [2] Additional 60 pounds of P_2O_5/acre in 1951 resulted in an average increase of 10.7 bushels over the residual which is shown.

Along with the rate of application of phosphate, the method of application may have a pronounced influence upon the persistence of treatment effects over a period of years. This is indicated by an experiment on a very phosphorus deficient Ida silt loam. Applications of 40 pounds of P_2O_5 per acre from several sources were made, drilled or broadcast and disked in for an oats-alfalfa seeding in 1950. The alfalfa in 1951 yielded one quarter of a ton more per acre where the superphosphate was drilled than where it was broadcast. The effect of placement was even greater for some of the other sources. Results similar to these were again recorded in 1952.

Fall And Spring Fertilizer Applications

For many years, it has been a rather common understanding that soluble phosphates and nitrogen fertilizers should be applied immediately before or at the time of planting of corn or small grain to insure the greatest efficiency of use. In case of nitrogen the application period has been extended to permit application after the crop has made a considerable growth in the spring. From the standpoint of convenience, potassium fertilizers have been applied with the phosphate.

It seems that the primary reason for not applying soluble phosphate far in advance of a crop is the possibility of fixation and subsequent loss in efficiency. That this actually occurs has been demonstrated in numerous field greenhouse and laboratory experiments. Where nitrogen is concerned, possible loss through leaching of the nitrate form has been the deterring factor. Fixation of potassium, although possible, is probably far less important a factor than the fixation of phosphorus.

In view of making the most efficient use of the farmer's time in the Middle West, and of increasing the quantity of fertilizer used in this area, it is necessary to review the position which has been held with respect to the fall applications of fertilizer. The possibility of realizing this goal of increased fertilizer use through bulk spreading and of savings accruing to the manufacturer and farmer from decreased costs in bagging and storage add impetus to this re-examination and to the research which would aid in this respect.

Several experiments were initiated in the fall of 1950 to estimate the difference between fall and spring applied nitrogen, phosphorus, and potassium fertilizers for corn and oats. Rates of each element were used alone and in all combinations with the other elements. Fall applications were made broadcast before planting. A combination of location and season in 1951 resulted in very small and non significant responses, and the data were considered inconclusive.

Additional experiments, similar to those outlined above were initiated in the fall of 1951, and were completed in 1952. The treatments and results are tabulated in table 3.

In four out of six experiments a response to nitrogen was measured; in seven out of eight a response to phosphorus; and in two out of two a response to potassium was observed. The responses to nitrogen were small compared to those which might be expected from 40 pounds per acre of nitrogen, and therefore the evidence regarding fall and

Table 3. Average responses of corn, in 1952, to nitrogen, phosphorus, and potassium fertilizers applied in the fall and spring of 1951 and 1952, respectively.

Treatment[1]	No. of Comparisons	Average Responses (Bu./A) Fall	Spring
N_1 (40 lbs./A N)	4	8.2	9.0
P_1 (40 lbs./A P_2O_5)	7	13.0	7.3
P_2 (80 lbs./A P_2O_5)	7	12.7	9.8
K_1 (40 lbs./A K_2O)	2	39.6	37.9
K_2 (80 lbs./A K_2O)	2	48.4	45.0

[1] N as ammonium nitrate, P_2O_5 as superphosphate, and K_2O as muriate of potash.

MINIMUM FERTILIZER GRADES* MIDWEST AGRONOMIST'S RECOMMENDATIONS FOR YEAR BEGINNING JULY 1, 1953

Straight Materials Supplying Nitrogen, Phosphate and Potash are Recommended

Ratio	OHIO	IND.	ILL.	MICH.	WIS.	MINN.	IOWA	MO.	KY.	KANS.	NEBR.	S. DAK.	N. DAK.
0-1-3	0-10-30		0-10-30	0- 9-27	0-10-30	0- 9-27	0-10-30	0-10-30					
0-1-2	0-10-20	0-10-30 0-10-20	0-10-20	0-10-20	0-10-20	0-10-20		0-10-20	0-10-20				
0-1-1	0-16-16	0-16-16	0-20-20	0-12-12	0-20-20	0-20-20	0-20-20	0-20-20	0-12-12	0-20-20			
0-2-1	0-20-10	0-20-10		0-20-10	0-20-10	0-20-10	0-20-10	0-20-10	0-14- 7	0-20-10			0-20-10
1-6-3				3-18- 9				4-24-12		4-24-12	4-24-12	4-24-12	4-24-12
1-4-4	4-16-16	4-16-16	4-16-16	3-12-12	4-16-16	4-16-16	4-16-16	4-16-16	3-12-12				
1-4-2	4-16- 8	4-16- 8		4-16- 8	4-16- 8	4-16- 8	5-20-10	5-20-10	4-16- 8				
1-4-1				4-16- 4									
1-3-9			3- 9-27										
1-3-6	3- 9-18	3- 9-18		3- 9-18	3- 9-18	3- 9-18	3- 9-18	3- 9-18					
1-3-2	5-15-10	4-12- 8	5-15-10			5-15-10		5-15-10	4-12- 8				
1-3-1								8-24- 8		8-24- 8			
1-2-3									4- 8-12				
1-2-2	8-16-16	8-16-16			8-16-16	8-16-16	6-12-12		5-10-10				
1-2-1						10-20-10	10-20-10		5-10- 5	10-20-10	10-20-10	10-20-10	10-20-10
1-1-3					6- 6-18								
1-1-1	10-10-10	10-10-10	10-10-10	10-10-10	10-10-10	10-10-10	10-10-10	10-10-10	8-8-8	10-10-10			10-10-10
1-4-0		6-24- 0				6-24- 0	6-24- 0			6-24- 0	6-24- 0	6-24- 0	6-24- 0
1-3-0							10-30- 0	13-39- 0		13-39- 0	13-39- 0	13-39- 0	13-39- 0
1-2-0						10-20- 0	10-20- 0	10-20- 0		10-20- 0	10-20- 0	10-20- 0	10-20- 0
1-1-0						15-15- 0	15-15- 0	15-15- 0		15-15- 0	15-15- 0	15-15- 0	15-15- 0
2-1-1	12- 6- 6	12- 6- 6		12- 6- 6					12- 6- 6				
2-2-1												12-12- 6	12-12- 6

*The production of higher grades of the recommended ratios is encouraged.

spring applied nitrogen is considered inconclusive. Responses of 14 to 16 bushels would be desirable to make good comparisons at this level of applied nitrogen. On the other hand the responses to phosphorus and potassium were considered good, at least for the lower level of application, and therefore it is felt that the data are a good estimate of the differences as observed in 1952.

There was little difference between the times of application of potassium on two extremely potassium deficient soils. Plowed under potassium gave only slightly greater responses than potassium applied after plowing in the fall.

Superphosphate plowed under in the fall gave consistently higher yields than when it was disked in on fall plowed land in the spring. This effect in favor of fall applied phosphate is probably due in part, to the placement, as is indicated in one experiment where the phosphate was applied before and after plowing in the fall. On an acid soil the response to the fall plowed under application was about twice as great as to the application after plowing. In a similar experiment on neutral soil, there was no difference between methods of placement in the fall.

As was pointed out above, and in the previous discussion of placement, the better responses from the fall plowed under applications probably resulted from the slight banding effect associated with turning the phosphate under. The broadcast treatment is more thoroughly mixed with the soil and more likely to become fixed. It is apparent that in 1952, the disadvantage of increasing the period of time for fixation by fall application was apparently offset by the advantage of a slight banding effect and deeper placement. The advantage of banding phosphate has been shown many times and was particularly significant in three oat experiments in Iowa in 1950. Phosphate tagged with radioactive phosphorus was applied drilled or broadcast in the

form of different sources at the rate of 40 pounds of P_2O_5 per acre. The fraction of fertilizer derived phosphorus was greater when the phosphate was drilled, and the difference was more pronounced on the acid soils than on the calcareous soils.

The reaction of the soil is also a factor which might affect the efficiency of fall and spring applications of phosphate. This effect was observed in a greenhouse experiment conducted during the fall of 1950, and the winter and spring of 1951 with acid Edina silt loam (pH 5.6) and calcareous Ida silt loam (pH 7.8). There was a highly significant response of oats (dry matter) to phosphorus applied on the basis of 40 pounds of P_2O_5 per acre of furrow slice on both soils, thoroughly mixed in the fall and in the spring and exposed to the weather during the winter. In case of the calcareous soil, no difference due to time of application was observed, while on the acid Edina silt loam the fall application resulted in a highly significant lower yield of dry matter than the spring application.

Two other factors which may affect the fixation of fall applied phosphate are the temperature and moisture conditions during the intervening time between fall and spring applications. As a chemical reaction, fixation would be influenced by temperature to the extent that it should proceed more slowly at the low temperatures of the fall, winter, and early spring than at higher temperatures later in the spring. Since soil constituents enter into the fixation of phosphorus, either the phosphorus must diffuse to the fixing agents, or vice versa. Once the soil is frozen, this diffusion is arrested, until thawing occurs. Being deeply placed, plowed under phosphate is out of the range of influence of diurnal freezing and thawing which may occur near the surface throughout the winter and early spring. The net effect of temperature and moisture factors could well be that a very small fraction of fall applied phosphate would be fixed before spring.

Further experimentation is needed and is under way to properly evaluate the effects of the above and other factors as they relate to fall applications of fertilizers. More information is needed on nitrogen. Of special interest is what happens to anhydrous ammonia when applied in the fall. When does it nitrify? How much of the resulting nitrate may be lost in drainage from a waterlogged soil in the spring? There are other questions too.

The answers to these questions are important because it is felt that bulk spreading of fertilizer in the fall will contribute substantially to the increased use of fertilizers in Iowa and possibly in other states in the Middle West. The results so far are quite promising.

On the basis of results obtained in 1952, it is considered an acceptable practice to plow under phosphorus and potassium fertilizers in the fall where fall plowing is practiced, and where the need for such quantities of fertilizer as are normally broadcast and disked in before planting is indicated. This is not intended to substitute for hill or row applications of fertilizer which should still be made.

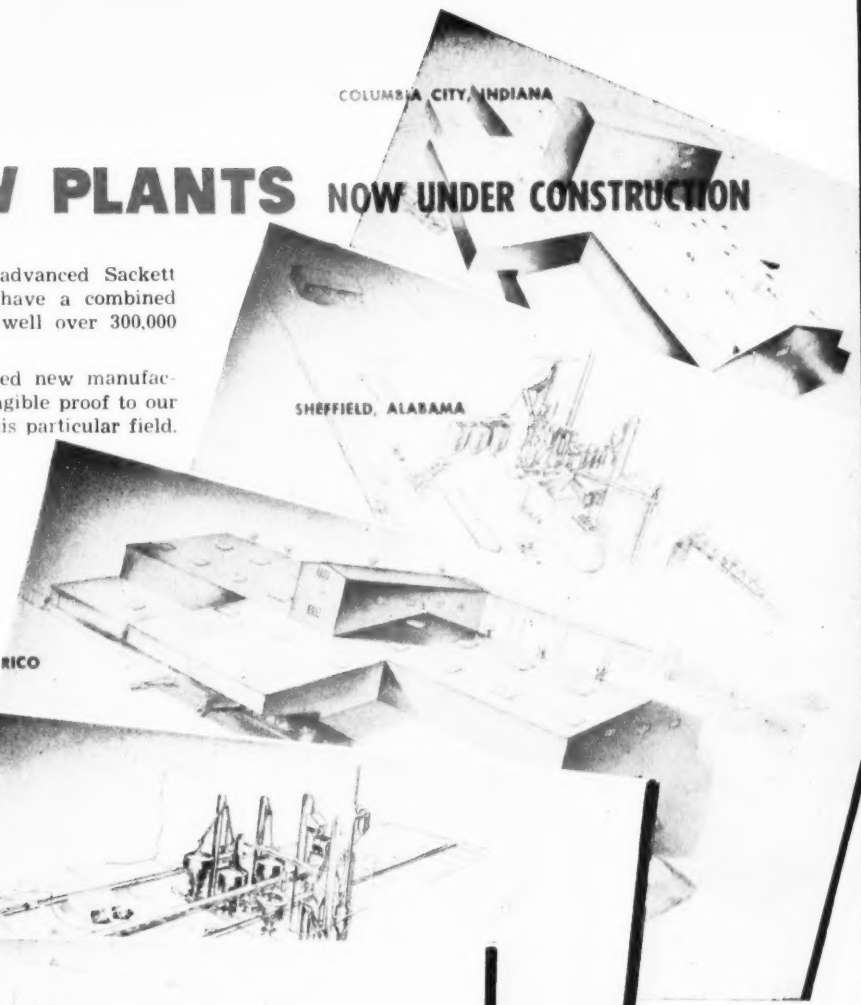
The above work has been supported in part by grants from the Middle West Soil Improvement Committee, Spencer Chemical Company, Coke Oven Ammonia, Industry Committee on Radioactive and Tagged Element Research, and the Tennessee Valley Authority. Part of the fertilizers were supplied by the Spencer Chemical Company, and the Bureau of Plant Industry, Soils and Agricultural Engineering, United States Department of Agriculture, and the Tennessee Valley Authority. Special equipment was designed and built under the supervision of Mr. G. A. Cumings of the Division of Farm Machinery of the B. P. I. S. A. E., and additional equipment was obtained through the cooperation of Dr. M. L. Jackson and the Agricultural Engineering Staff of the University of Wisconsin.

6 NEW PLANTS NOW UNDER CONSTRUCTION

These brilliant performers of advanced Sackett design will, upon completion, have a combined annual production capacity of well over 300,000 tons.

Each of these highly mechanized new manufacturing facilities adds further tangible proof to our long-recognized leadership in this particular field.

Superphosphate and mixed goods producers are invited to get our seasoned counsel on their expansion and modernization programs. It is available at no cost.



SACKETT BALTIMORE

America's Foremost Designers and Builders

SUPERPHOSPHATE PLANTS • FERTILIZER MIXING PLANTS • RELATED PRODUCTION EQUIPMENT

THE A. J. SACKETT & SONS CO., 1727 S. HIGHLAND AVENUE, BALTIMORE 24, MD.

Architects and Manufacturing Engineers to the Fertilizer Industry since 1897

JUNE 11-14 APFC CONVENTION

An attendance of more than 500 fertilizer manufacturers, agricultural education and research leaders, is expected at the Eighth Annual Convention of the American Plant Food Council at The Homestead, Hot Springs, Va., June 11-14, Council President Paul T. Truitt announces.

An outstanding program has been arranged for the Convention, featuring nationally-known authorities on farm policy, Department of Agriculture programs, agricultural production "tools" and regional agronomic information.

Rep. Walter H. Judd (R-Minn.) will be the banquet speaker on Saturday evening, June 13. He is a native of Rising City, Nebr., received his B.A. and M.D. degrees from the U. of Nebr., served in World War I and is regarded as an international authority on the Near East.

A meeting of the Council's Board of Directors will be held Thursday evening, June 11.

The Convention will begin at 9:45 a.m. on Friday, June 12, with an address by Council President Truitt who will be followed by Assistant Secretary of Agriculture J. Earl Coke.

Mr. Coke's address will cover many of the program changes and policies in the Department of Agriculture, particularly in the field of research, extension and land use in which he has the administrative responsibility under the reorganization of the Department. As Assistant Secretary, the following divisions of the United States Department of Agriculture come under his responsibility: Agricultural Conservation Program; Agricultural Research Administration; Bureau of Agricultural Economics; Extension Service; Forest Service and Soil Conservation Service.

Paul T. Truitt

Dr. T. K. Cowden, Head of the Department of Agricultural Economics, Michigan State College at East Lansing, also will be among the major speakers on the program for the opening day. Following his address, the Council's annual business meeting will be held and eight new members will be elected to the Board of Directors.

Rep. Clifford R. Hope (R-Kan.), Chairman of the House Committee on Agriculture, will be the first speaker on the Saturday morning, June 13, program.

A new feature for the Convention will be the honoring of the two farm magazine editors representing the winners in the "Soil Builders Award for Editors" Contest sponsored by the Council. The Contest was conceived and planned in cooperation with The American Agricultural Editors' Association for the purpose or recognizing both editors and their staff members "who have rendered outstanding service as soil builders and, as such, builders of a more sound and profitable farming system." National judges for the Contest are: Waters S. Davis, Jr., The National Association of Soil Conservation Districts; Roger Fleming, Secretary-Treasurer, American Farm Bureau Federation; A. C. Hale, National Vocational Agricultural Teachers Association, Inc.; Wesley Hardenbergh, American Meat Institute; Sherman Hoar, National Association County Agricultural Agents; Herschel D. Newsom, Master, The National Grange; Roderick Turnbull, Editor, WEEKLY KANSAS CITY STAR.

An annual feature of the Convention will be the agricultural forum which will be held on June 13. Speakers will be well-known extension agronomists representing the New England, the southern, midwest, and western sections of the United States.

H. H. Maynard, Chairman of the Department of Business Organization, Ohio State University at Columbus, will be the final speaker on the Saturday morning program.

Members of the Council's Executive and Convention Committees are: Chairman, James F. Doetsch, President, Chilean Nitrate Sales Corporation; John V. Collis, President, Federal Chemical Company; George W. Gage, President & General Manager, Anderson Fertilizer Company, Inc.; C. B. Robertson, President, Robertson Chemical Corporation; W. T. Wright, Vice President, F. S. Royster Guano Company; and George E. Pettitt, Vice President, Potash Company of America (ex-officio.)

Hope

Coke

Judd

JUNE 15-17 NFA CONVENTION

Distinguished agricultural, industrial and governmental leaders are scheduled to participate in the 28th annual convention of The National Fertilizer Association at the Greenbrier Hotel, White Sulphur Springs, West Virginia, June 15-17. Advance registration is reported to be the heaviest on record.

"Efficient Water Utilization" will be the topic discussed by a panel of experts at an open meeting of NFA's Plant Food Research Committee on the morning of June 15. Participants will be W. B. Camp of W. B. Camp & Sons, Inc., Bakersfield, California, an expert on both Western and Eastern irrigation problems; R. Q. Parks, Division of Soil Management and Irrigation, BPISAE, U. S. Department Agriculture, Beltsville, Maryland; James Ferguson, Memphis, Tennessee, who will speak for the Sprinkler Irrigation Association, Washington, D. C.; and H. H. Tucker, Director, Coke Oven Ammonia Research Bureau, Columbus, Ohio, and Chairman of the Committee, who will preside. A meeting of NFA's Board of Directors will be held the same morning.

Addressing the first general session, June 16, will be Hugh M. Comer, President, Avondale Mills, Sylacauga, Alabama; the Honorable True D. Morse, Under Secretary of Agriculture, Washington, D. C.; and Louis Ware, President, International Minerals & Chemical Corporation, Chicago, Illinois, who will speak in his capacity as Chairman of the Association's Board of Directors.

Leading off at the second general session, June 17, will be Russell Coleman, NFA's President. He will

Russell Coleman

be followed by a panel discussing "Proper Use of More Fertilizer," a topic of growing interest. With Roy Battles, Assistant to the Master, The National Grange, as moderator, the following will take part: Milton C. Cummings, President, Farmers and Merchants State Bank, Effingham, Kansas, representing the credit agencies; Werner L. Nelson, In Charge, Soil Fertility Research, School of Agriculture, North Carolina State College, representing the Land Grant Colleges; Frank W. Parker, Director of Soils Research, BPISAE, U. S. Department of Agriculture; and W. F. Price, Plant Food Division, Swift & Company, Chicago, Illinois, speaking for the fertilizer industry.

The customary recreational and social events, including the annual banquet and Festival Night on June 16, will round out the program.

S. C. Control Meet June 22-23

The South Carolina Feed and Fertilizer control officials will meet at Clemson June 22-23. It is expected that many of the officials will bring their wives, who are specifically invited.

S. C. Annual Meeting Slated For July 16

The Annual South Carolina Fertilizer meeting, to which all fertilizer manufacturers, dealers and salesmen are invited will be held July 16 at the Pee Dee Experiment Station, Florence. Timely talks and a tour of the station are on the program.

PACIFIC NORTHWEST Conference June 30-July 2

The 1953 Plant Food Conference of the Pacific Northwest Plant Food Association will be held at Washington State College, Pullman, Washington, June 30-July 2.

Convention November 4-5

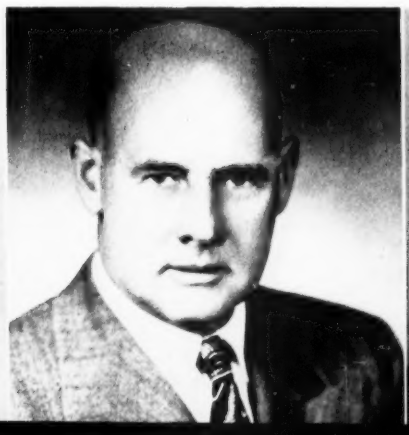
The Board of the Pacific Northwest Plant Food Association has chosen Harrison Hot Springs, British Columbia as the site of the 1953 convention, and the dates are November 4-5.

Ohio Bankers Plug Fertilizer

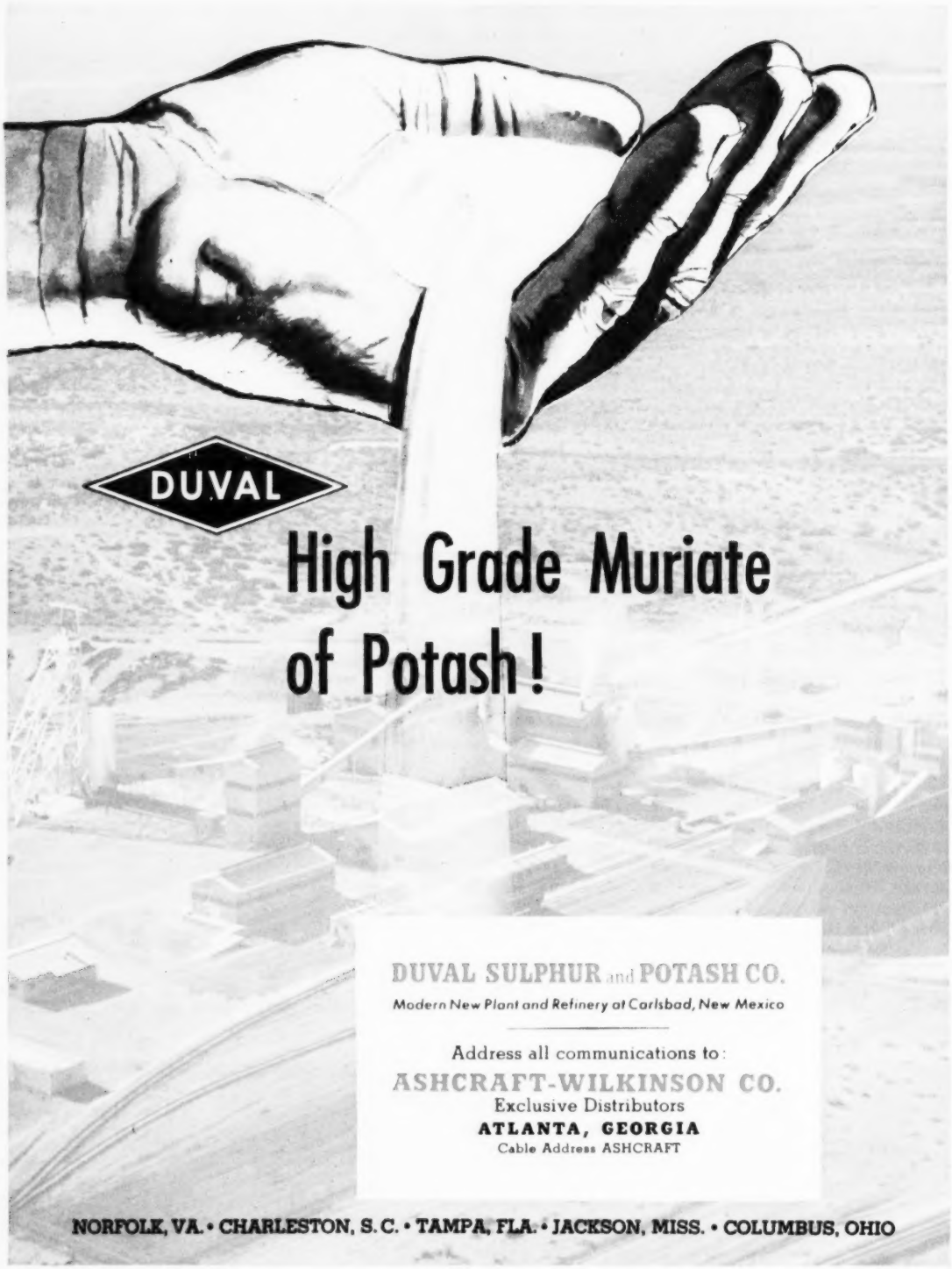
The Ohio Bankers Association has published a dramatic, colorful booklet, prepared in cooperation with NFA and Ohio State department of Agronomy which shows their members that it pays to finance fertilizer.

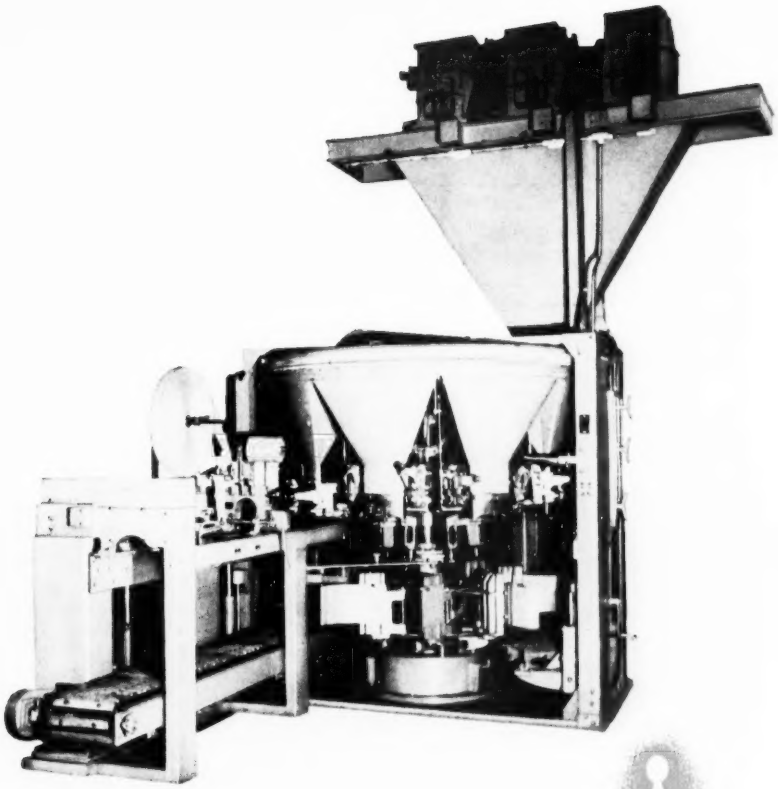
Comer

Ware



Morse


DUVAL
High Grade Muriate
of Potash!
DUVAL SULPHUR and POTASH CO.
Modern New Plant and Refinery at Carlsbad, New Mexico
Address all communications to:
ASHCRAFT-WILKINSON CO.
Exclusive Distributors
ATLANTA, GEORGIA
Cable Address ASHCRAFT
NORFOLK, VA. • CHARLESTON, S. C. • TAMPA, FLA. • JACKSON, MISS. • COLUMBUS, OHIO



Bagging 350 tons a day...with ONE operator!

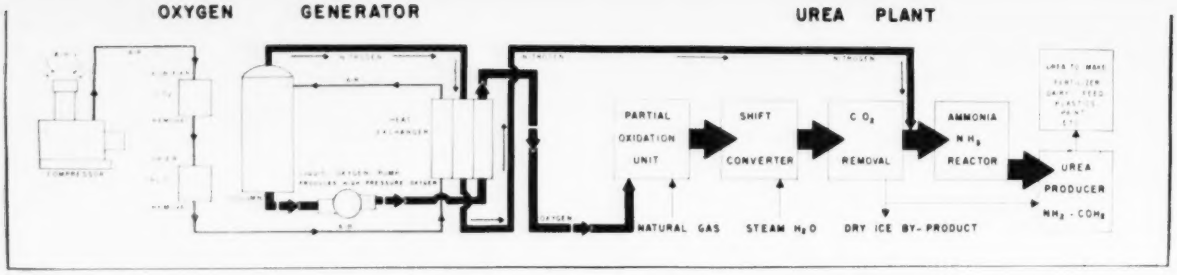
Bagging large tonnage of free and semi-free flowing materials in Multiwall Paper Bags becomes a simple one-man operation with the Model "A" BAGPAKER.

The Model "A" will package up to 7000 one-hundred-pound bags per 8 hour day. It requires only one man to hang the empty bags on the filling spouts. Accurate weighing, filling, settling and sewing are all automatic.

The Model "A" BAGPAKER is designed and manufactured by Multiwall Bag experts for reliable day in and day out service. It will pay for itself in 1 to 3 years. Over 30 of these machines are now being used in industry. Complete details may be obtained by writing to BAGPAK DIVISION, International Paper Company, 220 East 42nd Street, New York 17, Dept. C-10

International Paper COMPANY

BAGPAK DIVISION



PROCESSES PLANNED FOR GRACE MEMPHIS PLANT

William P. Gage, President of the Grace Chemical Company, announced today that engineering and construction of its nineteen-million-dollar nitrogen plant on a site near Memphis (Tenn.) would be under the direction of the Foster Wheeler Corporation. At the same time he stated that the three processes to be utilized in the new plant will be Texaco's Partial Oxidation, Casale, and Pechiney.

Synthesis Gas Preparation

The Texaco Partial Oxidation Process is unique in that it uses natural gas and oxygen, partially burning these at intermediate pressure and high temperature to obtain a mixture of hydrogen and carbon monoxide. In order for Grace Chemical to employ this process, an air separation plant is essential. The plant will separate the incoming air into pure fractions of nitrogen and oxygen and an impure nitrogen stream. The oxygen obtained from this unit is then mixed with compressed natural gas in the Texaco Partial Oxidation unit to produce the synthesis gas. The temperature of operation for the generators will be in excess of 2000 F at a pressure in excess of 300 pounds per square inch. The synthesis gas produced is quenched with a recycle stream of water to reduce the temperature. It then goes through the usual shift conversion and monoethanolamine scrubbing to remove the large amount of carbon dioxide produced in the shifting of carbon monoxide to dioxide for the additional production of hydrogen. The synthesis gas leaving the monoethanolamine absorber contains small quantities of carbon monoxide, argon, and other small impurities. In order to obtain a synthesis gas of very high purity, the gas is then subjected to a liquid nitrogen wash system in which the pre-cooled gas meets a stream of liquid nitrogen in a bubble-cap tower. Any impurities that have not condensed in the pre-cooled stage will be condensed in the tower and thereby removed from the synthesis gas.

After final purification in the liquid nitrogen wash tower, the synthesis gas is then compressed to the operating pressure of the Casale Ammonia System which is 8,000 to 12,000 pounds per square inch.

Casale Ammonia Synthesis

The Casale Ammonia System, of which Foster-Wheeler Corporation is the American licensor, is unique in that it uses an ejector for the recirculation of non-converted gases, rather than the more common compressor. Otherwise, the Casale System is quite similar to the standard ammonia process. One of the great advantages gained by the use of high pressure in the synthesis is that ammonia condensation can be brought about at the usual cooling water temperatures rather than the low temperatures obtained by ammonia refrigeration. Since very pure synthesis gas will be used for the ammonia synthesis, a long catalyst life and high conversion per pass is expected. The Casale ammonia plant is designed for a capacity of 250 tons per operating day, and it is expected that the plant will produce somewhat more. A portion of this ammonia will be used directly in the manufacture of urea by the Pechiney Process.

Pechiney Urea Synthesis

The urea plant uses purified carbon dioxide and ammonia as the raw materials. The purified carbon dioxide is obtained in the raw form from the monoethanolamine stripper and is then compressed and purified to remove traces of sulphur and oxygen. The individual feed streams are pre-heated and then forced into a high pressure autoclave to which a recycle ammonium carbamate-oil slurry also is added. The conversion of ammonia and carbon dioxide to ammonium carbamate is complete. However, the conversion of ammonium carbamate to urea is an equilibrium reaction and therefore not complete. However, it is expected that equilibrium will be reached. The material, as it leaves the autoclave, is reduced in pressure and some of the ammonium carbamate decomposes into ammonia and carbon dioxide. The mass from the autoclave goes into a stripper where all of the ammonium carbamate is decomposed into carbon dioxide and ammonia to be recycled to the autoclave. The bottoms of the stripper which contains urea, water and oil are then fed to a decanter where the oil separates, giving a lower layer of urea in water solution. The oil is passed through Pechiney's "Salt Oil Reactors" in which the recycle ammonia and carbon dioxide is absorbed in the oil, forming ammonium carbamate in a crystalline form. This oil slurry containing the ammonium carbamate then is recycled to the autoclave for further conversion. The urea in water slurry obtained from the decanter can be processed in two steps. First, it is purified to remove any metal impurities, and it will then be crystallized to give technical grade and feed grade urea, while a portion of the purified material will be evaporated directly and prilled to give fertilizer grade urea. The urea produced in this manner will meet all the necessary specifications for technical grade.

The advantages of the Pechiney system are that the carbon dioxide and ammonia which is obtained on the break-up of the ammoium carbamate can be recirculated in the ammonium carbamate form. Other processes either have to separate the carbon dioxide and ammonia completely before compression in order to avoid ammonium carbamate formation in the compressor cylinders, or the combined recycle of ammonia and carbon dioxide is

absorbed in water and then returned to the autoclave. The advantage of the Pechiney Process over the latter is the fact that no water is required for the recirculation of the gases and thereby a high conversion efficiency is obtained in the autoclave, without any excess of ammonia. The Pechiney Process is licensed in the United States by Foster Wheeler Corporation.

Through the application of these modern processes, considerable economy in operation will be realized compared to other synthesis gas preparations of ammonia processes.

The plant is scheduled to go on stream in the summer of 1954.

It will employ an air separation plant designed by Air Products Incorporated to furnish pure oxygen and nitrogen. Nitrogen produced in the form of ammonia and urea will be used for both agricultural and industrial uses.

Mr. Gage came with Grace Chemical Company, wholly-owned subsidiary of W. R. Grace & Co., early in 1953 as President and a Director of the Company. He formerly was Vice President in charge of manufacturing of the Shell Chemical Corporation, a position to which he was named in 1941.

John Carriere, former manager of the engineering and construction division of the Hanford Works of the Atomic Energy Commission's program, is plant manager. Controller of Grace Chemical Company is Harold S. King, formerly associated with Commonwealth Services, Inc. and Price Waterhouse & Co. C. J. Bown has been named manager of sales development and E. E. Winne, an assistant vice president of Grace Chemical Company, is in charge of the company's development department, which is actively investigating new projects for the future.

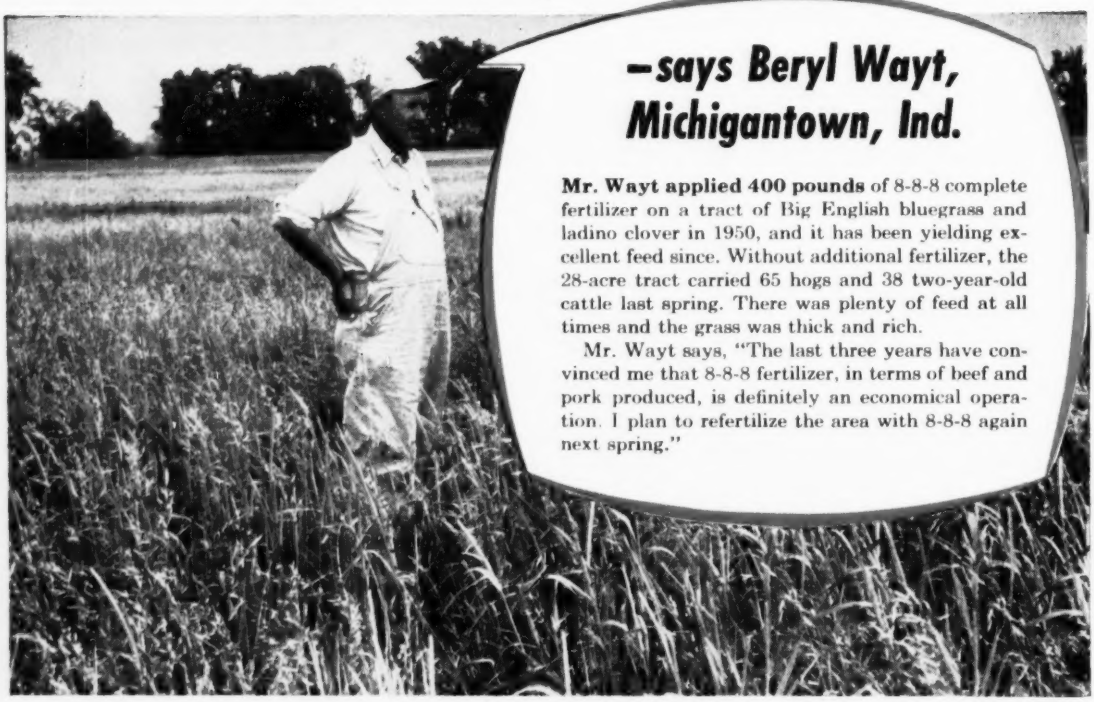
Point 4 Visitors At Clemson April 15

Twelve or fifteen agricultural leaders from foreign countries will be guests at Clemson Agricultural College, S. C. April 15, as part of a six-week Point Four course. They will also visit Muscle Shoals, Ames, Iowa, and be in Vermont and in Washington, D. C. a week each.

Kentucky Tour Slated May 5-7

The annual Kentucky Green Pastures tour is scheduled for May 5-7, under the sponsorship of the Kentucky AES. Three days will be devoted to farm visits.

"In terms of beef and pork produced, 8-8-8 on pastures is a real investment"



—says Beryl Wayt, Michigantown, Ind.

Mr. Wayt applied 400 pounds of 8-8-8 complete fertilizer on a tract of Big English bluegrass and ladino clover in 1950, and it has been yielding excellent feed since. Without additional fertilizer, the 28-acre tract carried 65 hogs and 38 two-year-old cattle last spring. There was plenty of feed at all times and the grass was thick and rich.

Mr. Wayt says, "The last three years have convinced me that 8-8-8 fertilizer, in terms of beef and pork produced, is definitely an economical operation. I plan to refertilize the area with 8-8-8 again next spring."

Bigger yields for farmers mean better business for you

THE big yields that high-nitrogen fertilizers produce are the strongest argument in favor of their use. Farmers find they pay for themselves over and over again.

Results like this are pushing the demand for high-nitrogen complete fertilizers up and up. Meet this demand by giving high-nitrogen fertilizers a big spot in your sales program.

And for the best results, use U·S·S Ammonium Sulphate for a major part of the nitrogen content. It's a dry, free-running material that performs well in mixing as well as in distributing equipment.

For complete information on U·S·S Ammonium Sulphate, get in touch with our nearest Coal Chemical sales office or write directly to United States Steel Corporation, 525 William Penn Place, Pittsburgh 30, Pa.

U·S·S AMMONIUM SULPHATE

9-447

UNITED STATES STEEL

YOUR ENTERING WEDGE FOR NEW MARKETS

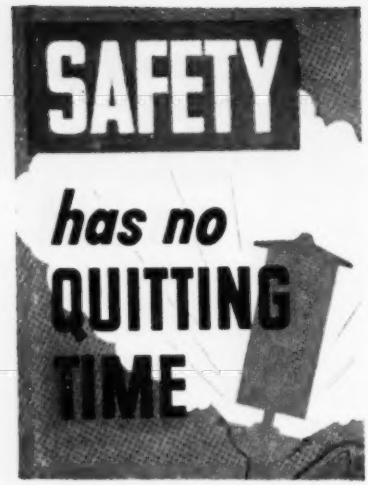
FULTON *TIME-TESTED* COTTON BAGS *for FERTILIZER*

Fulton's 36" 3.60 yard sheeting — makes a 100 lb. fertilizer bag that has given universal satisfaction from the time it was introduced by Fulton a few years ago.

Extra value appeal of cotton bags to farm women is unquestioned. Actual worth of the sewing material she reclaims from cotton bags (about 21½ yards per ton) far outweighs the small additional costs over bags that positively have NO re-use value. Extensive publicity in national magazines, radio and television, and consistent advertising in farm publications, has kept interest in sewing with cotton bags at high pitch.

Give your fertilizer sales appeal far beyond the analysis tag. Lift your brand above the common herd. Win new markets and build up your old ones with Fulton's attractive, useful and high quality cotton bags. It's not too late. Call your nearest Fulton branch now and get the benefit of sales building cotton bags for your fertilizer this season. Why not call now?

Fulton BAG & COTTON MILLS Atlanta · New Orleans · Dallas · St. Louis · Denver
Los Angeles · Kansas City, Kans. · Minneapolis · New York City, 347 Madison Ave. · Winter Haven, Fla · San Francisco · Phoenix



MAKING PEOPLE THINK

Preface To A Talk On Safety

By O. R. KIPHART, Phillips Chemical

Before getting into the talk I was scheduled to make, I would like to talk a little on making people Think.

Yesterday morning Gov. Talmadge told us that there are more people killed and injured in the United States every year than are killed or wounded in Korea. To me he could have more graphically stated this comparison if he had said that the city of St. Louis had been wiped out by some calamity—every man, woman and child,—because that is about the number of people that are killed or injured each year, because someone didn't **think.**

Yesterday afternoon at the panel discussion one of the delegates asked the question, "What can you do about a man who, after you tell him to be careful, turns around and in five minutes is injured?" These things brought to mind that at times we are all guilty of desiring the most out of life without too much effort or inconvenience.

While at work some employees would like to keep free from injury but are willing to do only the things that will subject them to reprimand if they are not done.

For instance, some employees want to keep their eyes and feet from becoming injured but would like to do it without wearing safety goggles or shoes. Good luck will hold out just so long, if you continue to look after life and limb in this manner. Therefore, it is up to industry to set up a department to make the employees THINK—this department is the Safety Department.

A number of years ago, in our shops and along our highways, the word THINK was posted. This word without any further explanation caused a great many questions to be asked. Although it has been used a great many times in safety campaigns, it is in order for us to use it again today.

If there is a hazard around where you work, think what might happen should you let it continue to exist. When leaving the house in the morning, think before crossing the street. There are hazards of all kinds you might meet.

God gave us a mind to think with. Why? One reason is so that we could use our brains to protect us against that which would destroy us. Injuries destroy tissue, bones and lives.

Why not use our brains to do more thinking about "how to work safely?" A lot of thinking has been done in industry today. It has already been written out in safety rules and regulations—a whole book of them. Safe practices have been brought out and set up to be followed.

So why not keep those practices in mind since so much thinking about the safety of the job has already been done.

A good storekeeper has repairs and parts in bins properly catalogued and easily accessible at a moment's notice. A poor storekeeper does exactly the reverse and often has the aisles cluttered up with useless material, which is strictly contrary to good storage practices.

The human mind is a storage place for thoughts; it can be utilized for good sound practical safety if the thoughts are easily accessible when the times come for them to be used. They can be brought out of storage on a split second's notice.

However, if we allow the aisles of the human mind to become cluttered with hazardous thinking, born of hazardous acting, thoughts of safety are often weakened and sometimes forgotten.

Industry, realizing that the mind has its limitations, set up a Safety Department, so that this badly needed space for habit forming thoughts could be used advantageously in connection with their safety campaign. For effect, the Safety Supervisor takes the workers back to school to pick up where they left off.

Do you remember how you learned your multiplication tables? At one time 2 x 2 and 4 x 4 presented a very serious problem and you probably resorted to, as most of us did, to using your fingers. However, as your mind became more receptive, and you absorbed the instructions of your teacher, the old bug-a-boo of 2 x 2 and 4 x 4 was automatically answered in your mind.

The Safety Department has laid down certain safety rules and regulations to be followed.

If these are read, absorbed, and stored away in the minds of the workers, the same as their absorption of their youthful multiplication tables, the answers and reaction to safety problems can become as automatic as the answers to 2 x 2.

They will know instinctively that certain things can be done, and other things must not be done. The safe procedure is known to them and can be used when the occasion arises. But rules and regulations and the absorption of safety rules is no guarantee against injury. There still must be a lot of thinking done.

I only wish it was a law that safety was taught in our schools; a law making the subject of safety a requirement so more and more people would realize the ever present hazards in our every day life, and help the Safety man who does a wonderful job in protecting lives.

Safety Problems OF A MAINTENANCE FOREMAN

By O. R. KIPHART

In these days of troubled times where the demand for more material is essential, you hear the foreman of today say "Get out production! Make the schedule! That's my job! Of course I want quality work. It's a job well done only when it's up to a quality standard. Of course I want low costs! My outfit makes stuff to sell in competition. Prices must be low. Certainly I want contented workmen. I have been a working man myself and I would always get more done when I felt right toward the gang and our boss. 'Quality, low costs, and cooperation are all part of my job. They add up to production'."

The foreman has a big share in the job of meeting that objective. We have in our plants today all the machines, equipment, jigs, tools and material needed to give high production and low costs as well as safe working conditions; regardless of the fact of how marvelous the machinery, people must make it work. And those people need directing. They need instruction, guidance, understanding and appreciation. Each one is different and gives the foreman a different problem in his everyday work in assigning men to jobs that the man can do safely.

The same man is different on different days or even at different hours during the same day. Some will work in one group, but will not fit in another group. They come to work with all their needs and every desire; all their likes and dislikes; all their independence and group spirit; all their good points and faults; and, all their habits—good and bad.

The worker, like every human being, is a creature of habit. His nature whatever it is, is a result of his habits. He may or may not have inherited certain traits which cause him to develop and keep some of his habits. He may or may not have picked up a great many of his habits from his surroundings, from the people with whom he lives, plays and works.

Posters on this and subsequent pages are reproduced from the excellent 72 page catalog of varied safety posters, a free copy of which can be had by writing:

National Safety Council
425 N. Michigan Ave., Chicago 11

Foremen in industry cannot waste any time arguing whether workers' habits have grown from their inheritance or from their surroundings. They are dealing with grown men and women; and they must deal with them as they find them. The best that one can do is to try to understand their habits and try to control those habits so that he can get the most useful work from the employee and help him to help himself to a better way of life.

Knowing the habits and nature of his workers is the greatest problem the foreman has today in meeting a schedule in a safe manner. He knows working groups will move slowly and change gradually. He, therefore, makes his plans well in advance and lets his plans be known before making any changes other than emergency changes.

The Safety Supervisor or Engineer, all too often, notes something that should be changed and starts immediately to make the change and enforce its practice without consulting the foreman and runs into trouble in accomplishing the goal.

No one knows the self-centered individual better than the foreman. Their inner selves live behind closed doors in hidden houses. It is hard for them to come to us as it is for us to go to them. Once in a while we can coax out those inner selves, but they run to safety at the slightest sign of danger.

Like other possessions, workers defend their way of doing things. Generally, the defense is based on feelings rather than on reason. They feel that they should continue doing as in the past, "I have always done it this way, why should I try to change?" is one of the most common queries heard everyday. So, unless you work through the foreman of a group, who knows his men and knows how to get the change made, the men will resist any change and even go to extra effort to see that it will not work.

While the job of reducing accidents is not finished, Industry can take pride in the fact that only 40 per cent of man-days lost from work during one of the war years was caused by industrial or occupational injuries; 60 per cent came from off-the-job causes. Yet, there can be no let-up in the War On Accidents. Certainly the foremen in your plant or my plant will never feel that they

What You Need, Mister, is PRODUCT CONTROL!

YOU DON'T NEED TO CONTROL YOUR TEMPER when you rely on Aquafil for product control. Aquafil makes it possible for you to market a better mixed fertilizer that is uniform . . . bag by bag. With Aquafil you no longer need to worry about "bag-setting" and costly reprocessing. Find out today about this new stabilizer for all mixed fertilizers that builds bigger profits for you.

YES SIR . . . GET ALL THE FACTS . . .

AQUAFIL

Product Stabilizer

One hundred pounds of Aquafil will do the same job as 400 pounds of old fashioned conditioners.

Learn How You Can Reduce Production Costs with

AQUAFIL

Send This COUPON TODAY

AQUAFIL COMPANY
96 B Avenue N.E., Cedar Rapids, Iowa

Please send me, at once your new folder telling how I can up profits in my mixed fertilizer operations.

Name _____

Address _____

City _____ State _____

can take it easy, as far as accidents go. The foreman today not only has the problem of dealing with and knowing the habits and natures of his workers, and work with him, but he must also work the new man than comes to his department everyday, due to the enormous turnover in workers, and work him without knowing whether or not he can do the job well and safely. The foreman must trust to luck when assigning a new man to a job, until such a time he can learn the habits of the man.

The most pressing safety problem that the foreman has today is in the fact that his work is spread over a very large area which makes it difficult for him to be at every job and instruct the workers in the safe procedure to follow in their work. Much depends upon the nature of the work, also.

Another factor which has a bearing on the safety record of a foreman is the short notice he receives on a job that must be done. The Maintenance Foreman when reporting to work for the day, looks over the jobs to be done, and assigns these jobs to the men who he feels can and will complete them in a safe manner; shortly after the assignments are made, an undesirable job comes up that must be completed without delay. He, therefore, has to assign someone to the job who may or may not have sufficient experience to do the job safely, or, even if the man is experienced, he may resent being pulled from one job to do another. He will often proceed to his new assignment thinking only of the dirty deal he has received and not of the full purpose and proper method of doing the job to which he is assigned. He does not think of the actual reasons, but with his feelings hurt, and grumbling such things as, "why do I get all the dirty jobs? I'm sick and tired of the way I am treated around here!" or, "with 20 years seniority I'm the one that gets all the dirty jobs!" Feelings—all of them—and with Feelings on the job instead of Concentration, an accident is on its way!

Another problem with which the Foreman has to deal is a worker's activities for any given day. Yesterday, Jim may have been the only man who could handle a particular job, because the foreman knew from past experience that his man could be relied upon to do the job safely. But—since the man at work is the whole man, he will act and behave under the influence of the conditions and happenings outside the plant. Therefore, today, Jim might be the worst man he can put on that particular job, for, try as he will, Jim cannot forget that sick wife or child, that unpaid grocery bill or even his everyday worries. And—try as he will, the foreman cannot detect these worries until too late to prevent an accident.

I remember one time when I first became a foreman, one of my best men, while hanging a 16" cast iron gate on a gas line, pulled the flanges up unevenly and broke the gate. Upon surveying the damage, I noticed the man's eyes were bloodshot and I made the remark, "If you would lay off the 'booze,' such a thing as this would not happen!" That afternoon, he was called home to take his baby to the hospital. He had been up walking the floor with his child the night before and had no "booze" at all. I learned a lesson, I learned to never criticize a man without first trying to find the reason behind his failing to do a job properly.

Man, at his very best, is a combination of emotions, and inevitably these emotions play a strong role in his performance of any given task. Work and fear are his constant companions. It is inevitable, therefore, that these emotions will be reflected in the performance of his duties and will remain "eternal hazards" where these duties involve danger, because it is impossible that any normally constituted person can operate without the existence of sub-concious feelings.

Taking all these things into consideration, it is axiomatic that if there were no human beings, there would be no accidents. The individual contributes 95 per cent to the factors needed to make an accident. "You can build a guard rail around a dangerous piece of machinery," but you can't fence off mental attitudes.

It is the mental attitudes that the foreman is faced with everyday. There is not a man in your plants today that has a greater responsibility of preventing all accidents than the foreman. To him the men working for him are the only people on God's green earth and preventing their getting hurt is his main concern.

The foreman is not only the Key-link between Top Management and the Worker, but is the Key-link in any accident prevention program. Work through him and you will meet success; work around him and you are doomed to failure.

If you will permit me, I would like to take the prerogative to make some observations relative to the work of the Safety Engineer or Supervisor. To make a safety pro-

gram most effective, you must alternate in your approach—that is, you first should turn to the foreman and Top Management and sell your program; then, turn to the foreman and all organization and put it into effect. It is my feeling that the most effective way for a safety man to work is to help supervision in its accident prevention activities. To do a good job, a safety man must be a person who is well versed in the problems of human relations and in understanding people.

I like to think of a safety program as a team project. The Safety Engineer might be classed as the quarterback of the team. It is the job of the Safety Engineer to call the signals, to block and let the Foreman carry the ball, and coordinate the team in its efforts.

Never should a Safety Engineer be like a quarterback who does very little blocking, but who sees to it that the ball is carried by him, particularly, when his team has the ball near the opposing team's goal line. The kind of fellow who likes the glory, but who is unwilling to do the hard work. Certainly there is no limit to that a man can do, if he is not too much concerned about who gets to carry the ball or about who gets the **glory.**

I say again, you cannot prevent many injuries when the foreman refuses to accept and use your ideas on safety but you can go a long way toward creating a good safety record for your plant when you effectively **sell** and get the foreman to **accept** and **use** your ideas on **safety.**

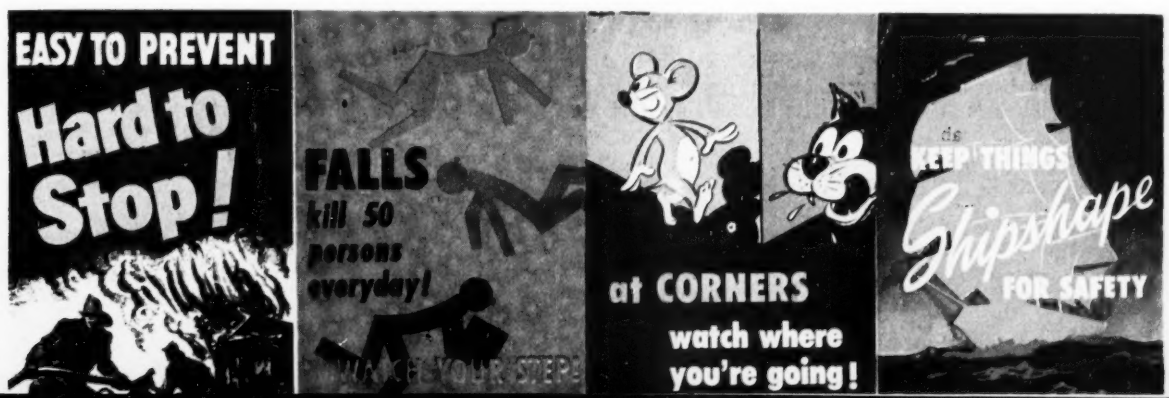
Unfortunately, the positive results of the efforts of a foreman cannot be measured with scientific accuracy. There is no way of knowing the accidents which were prevented through his efforts. In most fields of endeavor, we have both a positive and a negative measure of effectiveness. In baseball, the fielding skill of the player is measured both by his assists and put-outs and by his errors. At bat, his hits can be counted as well as the times he failed to hit. This is not true of a foreman. The death of an employee as a result of an accident is News. The saving of thousands of lives and the increase in production efficiency as a result of the Foreman's efforts are not headline stories. But—fortunately, foremen do not look for their reward in newspapers. They can always remember that in safety they protect, not a camera, but a human eye; not a pump, but a human heart; not a compressor but a human lung; not oil and grease, but human blood. They protect the most important machine in the world—the human body. Their reward as Foreman is the well being of all the people who come within the scope of their efforts.

THE IMPORTANCE OF *Fire Prevention*

By W. F. Zielinski, Marsh & McLennan, Inc.

I have been asked to address you today on the subject of "The Importance of Fire Prevention" in your industry. We who are engaged in this field of activity are convinced of its importance, not alone to your industry in particular, but to all industrial activities in general, as well as in the home. The effectiveness of our efforts may not always be readily seen. If fire occurs and an important property is seriously damaged or destroyed, it is usually possible to determine in what respect the principles of fire prevention were not observed or were violated. On the other hand, freedom from fire occasions no comment and the importance of fire prevention is sometimes lost sight of as a consequence.

As an important contribution to society, your industry, through the manufacture and distribution of fertilizer materials, supplements nature in raising the productivity of the soil to keep pace with an ever increasing population growth. Food, which is the end product of your efforts, is essentially dependent upon plant life, either direct as such, or indirect to conversion through meat products. Plant life in general, is self-perpetuating. Nature provides adequate sources of many of the necessary components, such as sunlight, water, carbon-dioxide. Other elements such as nitrogen, phosphorous and potassium, in forms available to growing plants, may become insufficient in time, due to their depletion with each successive crop. This gradual depletion of important chemical elements in time renders the soil unsuited for proper plant growth. To replenish these chemicals is the function of your industry and therein lies the importance of your industry to the general welfare of the community. It is not the intention to recite to you gentlemen the history and development of the fertilizer industry, as you are all familiar with this development from the earliest use of animal wastes, such as the



manures and guanos, to the present day scientifically processed and blended materials. It is a far cry from the early agriculturist who depended upon animal wastes and fish scrap for his fertilizer materials to the present day modern synthetic ammonia plants, which utilize gaseous hydro-carbons as raw stock for the manufacture of one of your important base materials. Yours is definitely a chemical industry.

In the respect that your industry is so important to the general well being of the community, its continuity of operation is vital. To the same extent, the practice of fire prevention is important as an adjunct to aid in the uninterrupted flow of your products to market. You gentlemen as safety engineers, are essentially interested in the welfare of personnel, through accident prevention and the control of occupational diseases. Every accident represents an economic loss to the injured, to the property owner and to the community. We who are engaged in the field of fire prevention are essentially interested in the safeguarding of physical property for the same reason. A plant damaged or destroyed, similarly represents an economic loss. Although the monetary loss may be recovered, at least in part, by insurance, this alone cannot lighten the burden of the employee who has become unemployed; nor restore the health of the injured or the life of the deceased; nor the loss of a competitive market resulting from the inability to serve the customer. Therefore, to appreciate the importance of a sound program of fire prevention, these possible consequences of a property damage loss should not be obscured. As I mentioned previously, if during the life of a property there has never been a property damage loss of consequence, the benefits of a program of fire prevention may appear intangible, although nevertheless real. But certain tangible results may be easily seen. Without a good fire prevention program, a property owner's loss experience may be so unfavorable that he finds it difficult to secure adequate insurance coverage to protect his investment. Or the premium that he pays for such insurance coverage as he is able to purchase may be prohibitive. This is true if he fails to provide a satisfactory system of fire protection. An important factor in the establishment of fire insurance rates consists of the degree of, or the absence of fire protection facilities. Without such protection he pays a penalty for that negligence and that penalty is repeated each time his insurance is renewed. On the other hand his insurance costs are lessened because of fire protection. The added cost of that protection is absorbed by the reduced rates resulting therefrom, in some cases in a very few years. The savings thus effected are henceforth repeated every time the insurance is renewed. Another factor which likewise bears on the cost of insurance and is equally tangible, is construction. It is obvious that if combustible building materials are employed in construction, the cost of insurance will be greater than if superior materials were used. Careful consideration should therefore be given to the selection of building materials in the erection of any new structures or in remodeling or extending existing structures. In your industry, past practice has been to utilize lumber very liberally in construction and many monuments to this type of construction can be observed around the country in the shape of Mill and Acidulating Buildings and Dump Sheds. These are usually of very large area and although classing as one story in height only, the actual height in feet is frequently great. This type of construction is reflected in the extremely high cost of insurance, as so many of you in the fertilizer business are aware. In new construction, and especially in the associated Petro-Chemical industry, where important fertilizer grade nitrates are manufactured through the synthesis of gaseous hydrocarbons and atmospheric nitrogen, into ammonia and nitric acid, the trend has been to utilize only such structural materials which grade as non-combustible.

FIRE-SAFETY RESEARCH

Armour Research Foundation of Illinois Institute of Technology has just organized a fire protection and safety research group for service to Midwest industry. Purposes: to prevent fires or explosions; to stop fires from spreading; to provide for rapid detection and extinction of fires; and to prevent accidents.

We appreciate the fact that you gentlemen in the field are concerned primarily with your problems as created by existing plants with which you are associated, and if that plant happens to be largely of combustible materials, and perhaps without the benefit of adequate fire protection, your problem of preventing and protecting against fire is intensified. Experience in your industry has proven too frequently that once a fire starts, it runs its full course, resulting in large damage and frequently in total destruction. I believe that you are to be addressed this day on the subject of housekeeping in the fertilizer manufacturing industry. This is a subject of great importance and is intimately associated with fire prevention.

The ideal time to commence an intelligent program for fire prevention and protection is when a plant is still in the blue print stage, by incorporating in the design the latest developments in the field as well as the accumulated engineering available. Your insurance advisors stand ready to assist and counsel you in this important phase of the project. In general there are five important features which should be reviewed: (1) Selection of the plant site; (2) Construction; (3) Occupancy Hazards; (4) Mutual exposures; (5) Protection.

The plant site is dependent upon certain economic considerations beyond the scope of this paper, such as marketing, shipping facilities, labor supply, etc. In the interest of fire prevention however, it is desirable to secure a site with ample water supply in volume and pressure, and with public fire protection facilities available. The National Board of Fire Underwriters grade public fire protection facilities from Class 1 to Class 10, the latter having

MATHIESON

AGRICULTURAL CHEMICALS

anhydrous ammonia
superphosphate
ammonium sulphate
nitrate of soda
base goods

9-gamma BHC dust base
9-15 BHC-DDT dust base
50% DDT dust base
12-14-gamma technical BHC
36-gamma technical BHC
ground and refined sulphur

high analysis pelletized fertilizers:

Ammo-Phos-
16-20-0, 13-39-0

Ammo-Phos with potash such as
12-24-12, 13-13-13

regular grade mixed fertilizers

DISTRICT SALES OFFICES:

Baltimore 3, Maryland
Houston 2, Texas
Little Rock, Arkansas
St. Louis 2, Missouri
Williamston, North Carolina
Lebanon, Pennsylvania
Jackson, Mississippi
Phoenix, Arizona

MATHIESON

for complete information write:

MATHIESON AGRICULTURAL CHEMICALS COMPANY

Division of Mathieson Chemical Corporation
Little Rock, Arkansas

HOPEWELL HITS A MILLION SAFE HOURS

Nitrogen Division personnel at Hopewell have completed one million man-hours without a lost time accident. The million mark, which has been reached only twice before in the plant's 25 years of operation, was made February 25.

The climb for the safety goal began December 2, when the last lost time accident occurred.

Computation of safety statistics at Hopewell includes all Nitrogen Division personnel in the city, Development as well as Production.

The all-time safety record at Hopewell was made between August 18, 1951, and January 1, 1952, when nearly a million and a half (1,499,875) man-hours were worked with no lost time accidents.

The only other time the million mark was reached was between March 24, 1949, and July 7, 1949. This time the total was 1,135,805.

If the number of personnel at Hopewell remains as it is now, the all-time record will be broken next April 9.

Paying tribute to Hopewell personnel for achieving the latest safety goal, Supervisor of Safety J. T. Trolinger commented:

"The accomplishment of one million man-hours without a lost time accident is the direct result of active cooperation between the management of the plant and each and every one of the Hopewell employees. The desires of management with respect to employee safety could never be accomplished without thoughtful and careful operation by men in the field."

From March Issue Nitrogen Division "Life."

little or no value. Besides the comfort which is derived from knowledge that the property is under good public protection, there is also an added economic value, reflected in lower insurance costs.

The type of construction selected for each of the various building structures as proposed, should be carefully reviewed with emphasis on full fire-resistive construction. We realize of course that this is not always practical or possible, but it should always be remembered that the more a structure departs from the full fire-resistive class, the more susceptible it is to fire damage. As an example, a non-combustible building, erected with a steel frame and corrugated asbestos or metal wall siding and roofing, may be entirely satisfactory if the building is to contain equipment, stock or processes of low combustibility or hazard. The same type of construction for highly combustible contents would be unsatisfactory. A standard fire-resistive building, without any exposed steel structural members normally withstands the effect of fire without suffering material damage. But even this type of structure is sometimes badly damaged when fire occurs in highly combustible materials, to the extent that the concrete may spall and in some cases may fuse like molten glass. In recognition of this fact we prefer to use the term fire-resistive rather than fireproof in describing the better type of construction. In general, the order of preference for building construction materials would therefore be full fire-resistive; non-combustible construction if designed for low hazard occupancies essentially non-combustible; masonry with slow-burning or mill type wooden floors and roofs; masonry with lighter floors and roofs of wooden construction; non-combustible with combustible contents; frame or ironclad frame. As the combustibility of the building construction increases, so does the cost of insurance protection.

By the term occupancy, we refer not only to the general processes and operations contained within a given structure, but also incidental and auxiliary features of hazard that may be encountered. So far as may be practical, auxiliary features of hazards should be isolated. As an example, the storage of fertilizer materials, such as the nitrates or other Class C materials, when inside of the main building, adds considerably to the degree of fire hazard and to the cost of insurance. This is true also of other fertilizer materials designated as Class B, but the effect in cost of insurance is less. Your insurance advisor can provide you with a complete list of fertilizer materials of Classes A, B, and C to guide you in this problem. It is customary to permit not over one day's supply of materials of Classes B or C within the main building; all stocks in excess of this quantity should be stored in a detached structure, or in a cut-off fire-resistive vault if within the main building. Used nitre bags, washed or unwashed, should be isolated from important structures immediately. Excess bag storage, and bag printing should be separated from main building values if possible. If gasoline lift trucks are used, within Dump Sheds or other buildings, they should be of a safe type listed as such by the Underwriters' Laboratories; they should be removed from the building at night or when the plant is not in operation. In every case, gasoline fuel should be dispensed from a safely located gasoline pump of the standard service station type, located in the yard and connected to a buried tank. Small supplies of gasoline for cleaning or other use should be discouraged as ordinarily a less hazardous substitute is available. In any event, any necessary gasoline should be kept in gasoline safety cans designed for the purpose and should be preferably of not over 1-gallon capacity each. Dynamite and detonating caps should be separated from each other. Local regulations should be strictly observed with respect to quantities allowed and distance requirements for location. In general the quantity should not exceed 200 pounds and the distance not less than 100 feet. Solidified bulk nitrates should not be broken with an explosive. Lubricating oils can become a source of trouble due to improper handling, and such liquids preferably should be dispensed from standard pump type steel cabinets available for the purpose. Waste

Calmonite

AMMONIUM NITRATE-LIME

20.5% NITROGEN

2 FERTILIZERS IN 1
Contains 10.25% quick-acting *nitrate* nitrogen.
Contains 10.25% longer-lasting *ammonia* nitrogen.

GREEN PELLETS READY TO USE
Sized for flow and ease of application in broadcasting, top dressing, side dressing, and irrigation. Non acid-forming.

ECONOMICAL SOURCE OF N
At low cost, Calmonite furnishes Nitrogen in the 2 forms needed by all plants — for rapid, early vigorous growth and sustained development.

SUPPLIES CALCIUM, TOO
Contains 35% to 40% calcium carbonate, secondary plant-food essential to soil productivity and good crop yields.

NOW AVAILABLE, F.O.B.
Regular Atlantic and Gulf ports, in even-weight, 6-ply paper bags with 2 bituminous liners.

LOOK AT CALMONITE!
Write for a sample and for additional information today.

Exclusive Distributors for
Ruhr-Stickstoff Aktiengesellschaft
Bochum, Germany

H. J. BAKER & BRO.
600 Fifth Avenue, New York 20, N. Y.
Branch Offices
Baltimore, Chicago, Savannah & Tampa

H. J. BAKER & BRO.

or rags used for wiping oil drippings or spillage, or cleaning, should be promptly placed in a metal can equipped with a self-closing cover and the can should be emptied at night. Ventilated metal lockers are recommended for employees' clothing, and the Change Room should be located away from main building. Steam or hot water heat is preferable. Employees should not be permitted to rig up make-shift heating devices. Home-made salamanders, stoves improvised from open-top oil drums, stoves with defective supports or burnt-out chimneys, should not be tolerated. Permanent stoves should be clear of combustible materials, nearby woodwork protected, and stovepipes should be vented to the outside with proper clearance where passing through any combustible walls, ceilings, floors or roofs. Brick chimneys constructed from the ground are preferable. Steam boilers for central heat or power should be detached and located in a fire-resistive or non-combustible building and the structure used for no other purpose. Under no circumstances should employees be permitted to make alterations or extensions to the electrical system. A competent electrician, familiar with the requirements of the National Electric Code should be employed for this purpose. In designing a new plant, it is understood that the entire electrical system for light and power will be installed in accordance with that code and any local codes which may govern. In existing plants, where substandard installations may be present, steps should be taken to standardize the equipment. If the occupancy of any structure is such that an explosive atmosphere may be present, only such electrical installations should be permitted therein which incorporate the use of explosion-proof equipment. If ammonia cylinders are stocked, or storage tanks provided they should be protected against mechanical injury or exposure to excessive heat. If a tank house is provided, it should be used for no other purpose and under no circumstances should there be stored within the ammonia tank house, oils, acids, and other chemicals, particularly those of the halogen group such as chlorine, bromine and iodine. Machinery bearings should be closely supervised to prevent over-heating, especially where mounted on combustible conveyor housings or equipment, or where combustible dusts may be present. If any combustible materials are milled, particular attention should be given to the control and safe removal of dust; electrical equipment should be of a dustproof pattern; spark emitting devices should not be tolerated and suitable separators should be provided ahead of all milling equipment to eliminate and remove tramp iron, such as nails, bolts etc., which might have become mixed with the stock which is to be milled.

There are many cases on record where fire, occurring in some relatively negligible structure has spread to and destroyed main buildings. Here again, in the design of a plant, careful thought should be given to segregation by means of clear space between buildings. The amount of clear space is dependent upon such factors as construction of exposed and exposing walls, and the size of the buildings concerned.

Ferro FTE, a slowly soluble oil mineralizer, will be made available to the home gardner in one pound and five pound packages like these by E. I. Du Pont de Nemours and Company, Inc. this spring. The product is a new development of the Ferro Corporation of Cleveland, as reported here recently.

Congestion adds greatly to the fire protection problem. It is not our intent to set forth a table of allowable distances, but consideration should be given to the subject. Furthermore, fire insurance rates are materially increased where severe congestion exists. Reference to the rules of rating by the local insurance rating organization will reveal the preferred distance required in each case to prevent the imposition of rate penalties for this particular feature. Where masonry structures are involved, there distances may be reduced by specifying standard fire windows and doors in exposed openings. There is no such provision for non-masonry walls. If separation between two adjacent sections of one building is required by means of interior division fire walls, any necessary openings in such walls should be protected with standard automatic fire doors arranged in pairs, one on each side of the wall at each opening.

The foregoing briefly sketches a number of things that can be done towards the cause of fire prevention in the design of a new plant and in some cases, to improve existing facilities. Unfortunately, and in spite of all that may be done, we must recognize the fact that fires do occur. To combat fire it is therefore necessary that a good fire protection system should be provided to back up the fire prevention program. In the study of fire, combustible materials have been placed in several general groupings consisting of Class A which includes all ordinary combustible materials which when ignited require the quenching and cooling effects of water. Class B includes oils and greases, where a smothering or blanketing effect is important. Class C refers to electrical equipment, where extinguishing agents of a non-conducting type are required. The nature of the fertilizer industry is such that the larger values which may be involved in fire would usually require an ample water supply for Class A fire protection equipment. Under the subject of selecting a site, I have previously mentioned that ample water

was important. The availability of a trained city fire department and proximity of city water mains and fire hydrants provide excellent primary water protection. Prompt alarm and a reliable system of transmitting alarms is an important adjunct to your protection. Private water facilities to serve as a secondary source of protection are desirable. In many cases, your properties are beyond the limits of public protection and are dependent solely upon their own facilities. A private system of water protection is expensive and its design should be entrusted to a qualified engineer so that the investment will yield the best possible fire protection and insure the best possible recognition in the cost of insurance.

An important type of fire protection system which employs the application of water consists of automatic sprinkler equipment. Water supplies to these systems are usually tied in with the yard hydrant systems, but preferably are independent of process or service water systems. Where such protection is provided, only trained personnel should be placed in charge, and only a u t h o r i z e d sprinkler installers should be employed in making alterations or repairs. The system as installed is designed to operate automatically when fire occurs, to prevent excessive water loss or damage by confining the fire to its point of origin through the operation of a minimum number of sprinklers. These desirable features may be nullified through lack of proper maintenance, improper arrangement of stock, unauthorized closing of control valves, inoperative sprinklers caused by corrosion, or loaded with dust, lint or other waste materials, depleted water supplies, etc. These systems are very expensive but year after year they yield dividends in the way of greatly reduced insurance costs. As good housekeeping ranks high in the scale of fire prevention, so does knowledge of the use of first-aid or hand fire fighting equipment rank equally in the associated field of fire protection. By always remembering that most fires start in a small way, it will be obvious that the importance of small hand fire extinguishing appliances lies in their value to control fire in its incipiency. We are all familiar with the hand fire extinguishers operated by inverting, the hand water pump tanks, water barrels and pails, dry chemical, gas or vaporizing liquid extinguishers, and the small sized hand hose attached to water connections which we commonly call standpipes or vertical pipes. These first-aid devices should be conspicuously located. Properly maintained and intelligently employed, their value cannot be questioned. It is therefore important that each employee has a working knowledge of their operation and be personally concerned about their proper maintenance.

To supplement the equipment provided, both yard and first-aid fire protection, proper employee training is necessary. Confusion in time of fire is disastrous. The creation of an intelligent fire brigade, with crews available on all shifts, constitutes an important means of affording this training. With specified stations assigned, and monthly drills conducted, the employees become familiar with the fire protection equipment provided and confusion is eliminated. For overall surveillance at night and at other times when the plant is not in operation, watchman service should be provided. The watchman should report from each predetermined station on a recording device, such as a portable watch clock. In Communities where central station service is available, this type of service should be considered. For the general supervision of all features of fire prevention, protection and housekeeping, a self-inspection service is of great value. For this purpose a responsible employee should be assigned, and required to submit a written report of each inspection, noting all criticisms and offering recommendations for correction of defects. Suitable blanks may be prepared for this purpose. In some jurisdictions the local fire insurance rating organizations provide a uniform blank, which if properly executed and filed with them twice each month, a reduction in rate is allowed.

In closing, I would like to repeat my remarks that we who are in the field of fire prevention are thoroughly convinced of its importance. But mere conviction is insufficient unless matched by action which recognizes that importance. The brief sketch that I have presented is offered to acquaint you with the broad scope of the subjects which contribute to a Fire Prevention Program through sound engineering principles of design and construction, intelligent supervision of operations and equipment, and proper employee training to guarantee the intelligent use of the facilities provided. Placed in practice, these represent Fire Prevention in action.

VIRGINIA SAFETY MEETING MAY 8

For the seventh time, fertilizer men of Virginia will meet to plan for better safety records in their plants, for this area was the originator of the program which has developed into the fertilizer safety section of the national safety movement. The meeting will be held at Hotel Roanoke, Roanoke May 8 under the general chairmanship of William C. Richardson of Southern States Cooperative.

The morning program features Dr. Edwin Kapusta, NFA on "What's New in Fertilizer"; "Case Histories" by Curtis A. Cox, V-C Chemical; "How to Develop a Safety program in a fertilizer plant" by W. C. Creel, N. C. Department of Labor.

After lunch, W. R. Connor of Paul H. Werres Company will talk on "Gangway for Gang Boards", followed by a talk on the value of publicity in safety by Lawrence A. Long. General discussion will complete the program, which is slated to end at 4:30.

Fertilizer Safety Meeting
Lord Baltimore Hotel

Baltimore, Maryland **May 8, 1953**

MORNING

9:30 A.M.—Parlors H. J. and K—Mezzanine Floor Chairman: A. B. Pettit, Supervisor, Industrial Health and Safety, Davison Chemical. Vice-Chairman: John S. Roszel, Manager, Industrial Relations, Baltimore Operations, Mathieson Chemical.

9:35 A.M.—"Housekeeping in Fertilizer Manufacturing Plants." Speaker: E. O. Burroughs, Jr., Manager, Insurance Department, F. S. Royster Guano Company.

9:55 A.M.—Discussion.

10:05 A.M.—Question and Answer Panel Discussion* Panel Members: F. Wayne High, Manager of Operations, Baugh Chemical; E. F. Carnell, Superintendent, Davison Chemical; Donald Allen, Superintendent, Virginia-Carolina; George F. Dietz, Safety Director, Fertilizer Manufacturing Cooperative.

AFTERNOON

2:00 P.M.—Parlors H, J and K—Mezzanine Floor. Chairman: A. B. Pettit; Vice-Chairman: John S. Roszel "The Safety Program from a Worker's Viewpoint." Speaker: Bernard T. Hartlove, President, Local 12138, United Mine Workers of America, Electrician 1st Class, The Mathieson Chemical Corporation.

2:20 P.M.—Discussion.

2:30 P.M.—Question and Answer Panel Discussion* *Panel Members same as morning session.

The Question and Answer Panel Discussions will be informal conferences on fertilizer plant safety. There will be no speeches. Fertilizer plants are requested to submit specific safety and fire protection questions, in writing, to A. B. Pettit, Davison Chemical Corp., Baltimore 3, Md. by April 27th. Specific questions may also be submitted from the floor; however, preference will be given to the written questions submitted in advance.

While the discussion leaders will attempt to answer the problems submitted, those in attendance will be encouraged to participate in the discussion.

This type of program, first introduced to this Conference in 1952, proved exceedingly popular at that time. It offers an excellent opportunity for a mutual, profitable exchange of experience.

Alstetter

(Continued from page 29)

Dr. McVickar made the same calculation for hay in Wisconsin. The cost of production of the extra hay coming from the use of recommended amounts of fertilizer would be $6.25 a ton.

In short, no matter how conservatively one calculates the economics of proper fertilizer use, the results are the same—more production at lower per unit cost.

There are those who say "Why step up efficiency? We've always had enough food. Let's not get too efficient or we'll have too much."

Professor Truog effectively answered this statement a couple of weeks ago at the Wisconsin Fertilizer School. Farmers, said Professor Truog, are in competition for their products with industry, foreign countries, and with other farmers. They can meet this competition by lowering unit costs of production, which under present conditions can be done by increasing per acre yields. Under our system of free enterprise economic well-being goes with increased efficiency. This is true for an individual farmer, for a state, or for a nation.

The current situation in the market place gives particular importance to the subject of fertilizer economics. The farmer is in a cost-price squeeze. He must keep his unit costs low if he is to continue to prosper or even survive. Add to this the fact that the emphasis of the Department of Agriculture under the new administration in Washington appears to be on free markets and increased farm efficiency. The proper use of fertilizers would appear to be the tailor-made answer to this situation. For no other practice on the farm will contribute so greatly to reduced unit costs and increased efficiency.

In summary, I would say:

(1) The opportunity exists for profitable use of more fertilizer than can possibly be produced within the next few years.

(2) This great opportunity for profitable use is created by our agricultural colleges. To the extent that they are supplied with facilities and personnel, they will create new opportunities faster than we can exhaust them.

(3) Taking advantage of the opportunity is largely a job of showing farmers that following fertilizer recommendations is profitable. In this field as in many others, the objectives of the fertilizer industry and the agricultural college and field workers are identical.

(4) In light of the current market outlook it has become an urgent economic necessity for the individual farmer to cut his unit costs of production by increased and proper use of fertilizers.

In short, the stage is set for the disposition of the increased future supplies of fertilizer. From now on it just depends on how well we all do our job.

USE Bemis Waterproof LAMINATED-TEXTILE Bags

for your hard-to-pack products!

GET 5-WAY PROTECTION . . .

They guard against:

- Change of moisture content
- Sifting
- Escape of undesirable odors
- Loss from snagging and tearing
- Rough handling in l. c. l., truck, or export shipment

3- or 5-Layer construction depending on your protection requirements. Special linings of treated papers and films available.

Bemis

408 Pine St., Box 46,
St. Louis 2, Mo.

Maybe You Need These, Too

If you don't require the exceptional protection of Bemis Waterproof Bags, Bemis Multiwall, Flexiply (laminated crinkled multiwall), Cotton or Burlap Bags are your best bet.

Whatever Kind of Bag You Need, WE MAKE IT!

I&C SIMPLIFIED BATCHING AND SACKING PROVES ITSELF IN MANY FERTILIZER PLANTS

A man with an idea appeared on the horizon of the fertilizer industry a few years ago. Strictly speaking he was already in the fertilizer industry, and had been for many years when his ideas suddenly began to attract the attention of a number of plant operators in the Southeastern region where he lived. The idea was that it took too many people and too much time to accomplish the routine but very precise operations of batching and sacking of fertilizer.

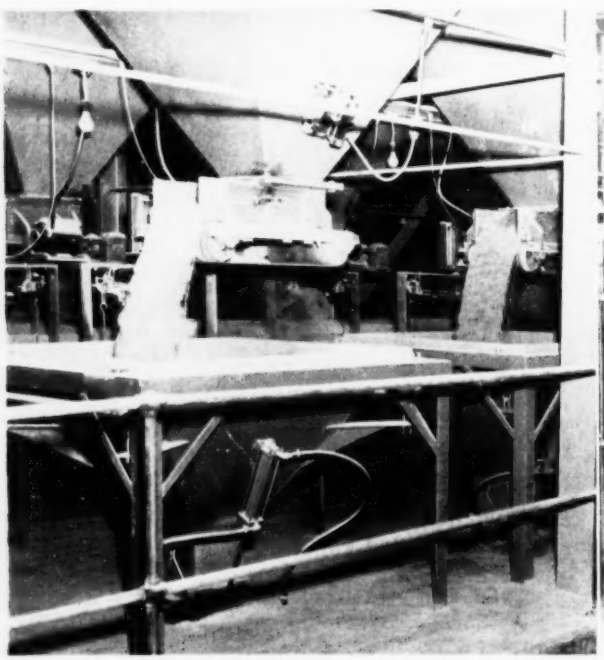
He worked for several fertilizer concerns and in 1942 bought one of them and went into business for himself. The plant was completely destroyed by fire almost immediately after he took possession.

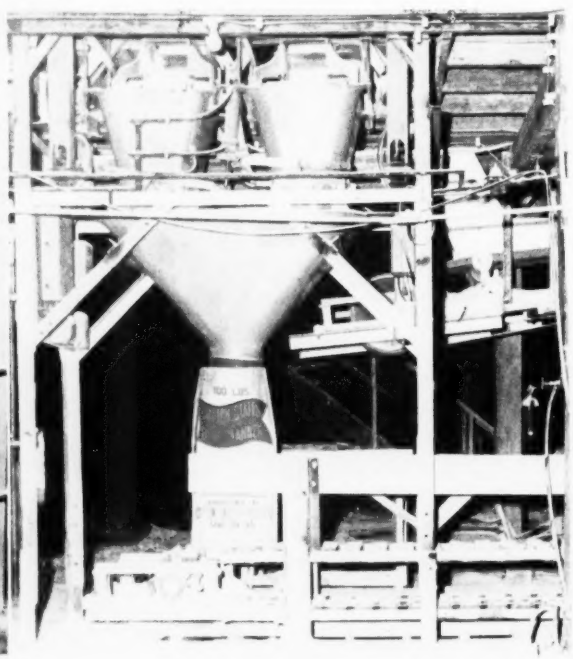
He went into the service and, as he says, learned a lot from the engineers to whom he was assigned, who were engaged in port and dock construction. And when he came back into the industry at the close of the war his main concern was to find ways and means to cut production costs. With the aid of the Etheredge Guano Company officials and the encouragement and practical aid that came from Paul P. Corley, who is now his business partner, the present Inglett and Corley System was developed by Wilfred L. Inglett.

We described the installation in the plant of the Empire State Chemical Company at Athens, Georgia, in our issue of December 1950. Even though this equipment has been improved, that plant reports a cost of $0.126 per ton with the equipment, as compared to a previous figure of $0.65, in the ammoniation of 27,653 tons of complete goods, with 3073 man hours—9 tons per man hour. Prior to installation of the I&C equipment, they got 2 tons per man hour. And in six months, maintenance was only a few dollars. Similar experiences are reported by other fertilizer plants—Batesburg Fertilizer, Batesburg, S. C., for example found their labor cut forty percent and a great increase in hourly tonnage. Centralia Farmers in Selma, Alabama, reduced their crew from 26 to 9, and increased production from 35 to 45 tons per hour, sometimes going up to 50 tons. And the consistency of their analysis, they credit to the accuracy of the I&C weighing system. Etiwan Fertilizer at Charleston, S. C. show a saving of 75% in labor cost and an increase of 60% in production.

Naco Fertilizer's Charleston plant,

Batching unit, currently in use at Empire State Chemical Co., Athens, Georgia, installed and built by I&C. Right: First completely automatic bagging unit made by I&C for Cotton States Fertilizer Company, Macon, Georgia—now in operation for 6 months.





with ten hoppers, after three months found they were getting more uniform analysis, and had increased production from 35 to 58 tons per hour, and their crew from 28 men to 8 men and 1 foreman. The Naco plant at Wilmington comment on the accuracy of the scales. Analysis is good there, and labor has been cut in half. Thirteen men were needed to run crop goods, and they now use six. Tennessee Valley Cooperatives, after batching about 20,000 tons found the system much more accurate, had saved considerable man-power, and the speed of the system limited only by the time it takes for the superphosphate to take up the liquid ammonia. I&C are at present installing two large Automatic Batching Units and several Automatic Bagging Units for International Min. & Chem. Corp.

The system fundamentally consists of automatic weigh hoppers, fed by the exclusive Automatic Belt Feeders, the belt and hopper both being under direct control from a central room where push-buttons actuate the operation. After that the I&C equipment takes over and weighs the material, cutting off when the proper weight is reached. Then the hoppers are discharged automatically to a conveyor belt leading to the elevator of the mixing machine.

Inglett & Corley, Inc. are located in Augusta, Georgia—and in addition to the exclusive automatic belt feeder, they manufacture gate valves which are operated automatically in connection with bag or batch weighing and are controlled with solenoid operated hydraulic or air cylinders, motor thrust or direct solenoid pull. These valves are for free flowing materials where constant pressure can be maintained in the supply bin and are adaptable to automatic weighing on any good commercial hand operated bagging of batch-weigh scale.

Charles Belding, Empire State Chemical Co., Athens, Ga., and W. L. Inglett, Inglett & Corley, Augusta, Ga., faced a stiff March wind long enough to permit this snapshot. The same day we watched Charlie clock the plant's new I&C automatic bagging unit—two men sacked sixteen 100 lb. sacks each per minute. The operation can be stepped up or slowed down simply by adjusting the controls.

Weather Resistant

Hammond Multi-Walls assure complete protection of your products in any kind of weather. Being water resistant, they keep out snow, rain or sleet . . . keep contents dry and safe until bags are opened, and your products used. Why not call in the Hammond man near you. His main interest is in recommending the *right* Multi-Walls for the exact requirements of your products. Prompt deliveries are assured.

HAMMOND MULTI-WALLS

For Multi-Wall bags, "make it a habit to depend on Hammond."

HAMMOND BAG & PAPER COMPANY

General Offices: Wellsburg, W. Va.

Plants in Wellsburg, W. Va. and Pine Bluff, Ark.

Representatives in the following cities: CHICAGO, ILL • BLUEFIELD, VA. • CHARLOTTE, N. C. KANSAS CITY, MO. • MINNEAPOLIS, MINN. • LIGONIER, PA. • WASHINGTON, D. C. NEW YORK, N. Y. • AKRON, OHIO • HOUSTON, TEXAS

Is it Time to Redesign Your Bags?

Well-designed, expertly printed V-C Multiwall Bags help build customer confidence in your products and your company. Good-looking bags have real sales appeal. If your multiwall bag trade design looks like years ago, call on V-C's experienced art service.

V-C Multiwall Bags are made of top-quality materials, carefully constructed to stand rough, tough treatment in handling, in shipping and in storage. They are available in standard sizes in the following types: sewn open mouth, sewn valve, sewn valve with sleeve or with tuck-in sleeve.

Now is the time to discuss your bag problems with a V-C representative.

Virginia-Carolina Chemical Corporation

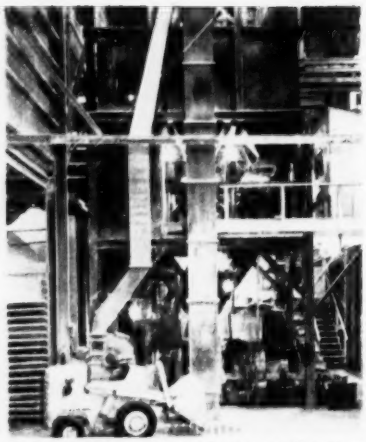
BAG DIVISION: 9th and Perry Streets, Richmond, Virginia

DISTRICT SALES OFFICES:

Atlanta, Ga. • Wilmington, N. C. • E. St. Louis, Ill. • Cincinnati, Ohio

VC BAGS ®

Other V-C Products: Phosphate Rock Products • Complete Fertilizers • Chemicals • Cleansers • Textile Fibers • Pest Control Products



I&C mixing and bagging units at Thurston Chemical Co., Trenton, Mo.

They also manufacture a screw feeder for automatic weighing of rock dust and other materials such as described above. They employ the same automatic principle in the weighing of liquids such as sulphuric acid and liquid ammonia. All Batch scales & bagging scales are sealed from dust.

Marietta Concrete Adds Florida Plant

The Marietta Concrete Corporation, Marietta, Ohio, has announced the incorporation of The Marietta Concrete Corporation of Florida, Hollywood, Florida. F. L. Christy, president of The Marietta Concrete Corporation, will head the new Florida firm, which will manufacture mortarless concrete block, precast concrete wall panels and farm and industrial silos. The new plant will have an authorized capital of $250,000. When completed, it is expected that the Florida plant will employ 200 production workers, including key men from the Marietta Ohio, plant during the initial operating period.

Associated with Mr. Christy and other present officers in the new Florida corporation will be Byron Radcliff of Wichita, Kansas, for many years engaged in the manufacture of concrete products.

The Marietta Concrete Corporation also operates plants in Baltimore, Md., Charlotte, N. C., and in cooperation with Precast Building Sections, Inc., in Long Island, N. Y.

INDUSTRY CALENDAR

Date	Organization	Hotel	City	State
May 7-8	CFA-Soil	Marysville	Marysville	Cal.
June 11-14	APFC	Homestead	Hot Springs	Va.
June 15-17	NFA	Greenbrier	White Sulphur	W. Va.
June 30-July 2	College	Harrison	Hot Springs	Brit. Col.
July	Canadian	Algonquin	St. Andrews	N. B.
Nov. 4-5	Pacific N. W.	Pacific N. W.	Pullman	Wash.
Nov. 9-10	CFA	Theatre	Carmel	Cal.

McCloskey Fertilizer Plants are Designed and Built *to Resist Corrosion*

Resistance to corrosion is one of the important factors taken into consideration when McCloskey designs and builds your fertilizer plant. Substantial and compact sections are provided for the frame which is readily protected with acid resistant coatings to insure long life and low maintenance.

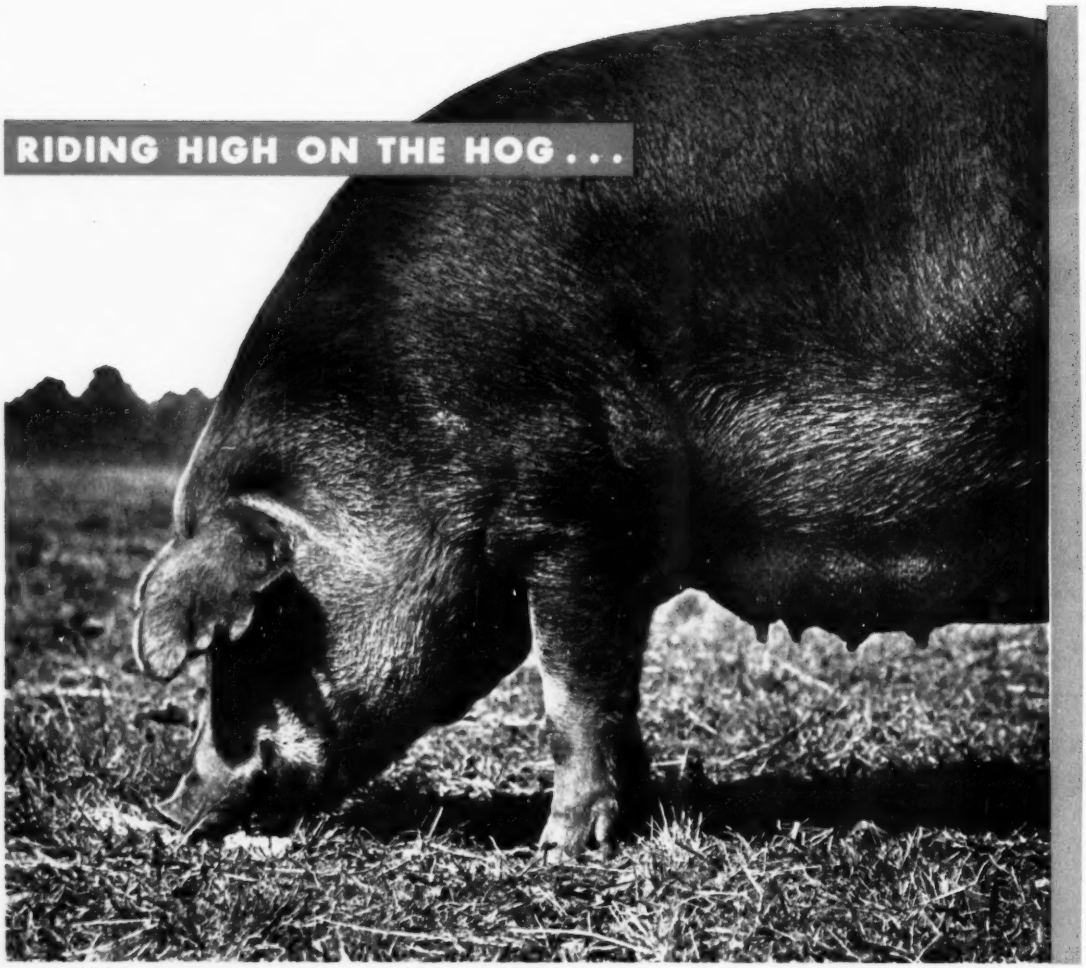
Other design advantages include greater resistance to damage than wood frame or light, space consuming truss construction. The danger of fire loss is eliminated. Clear overhead is provided for conveyor systems, high stacking of material, and the need for eccentric profiles in fertilizer manufacturer are all engineered into your building by McCloskey. Before you plan a new plant ask McCloskey to give you the benefit of their many years of experience in this field. We will save you time and money.

McCloskey Company of Pittsburgh

Engineers and Builders

3412 LIBERTY AVENUE, PITTSBURGH 1, PA.

THE MARK OF GOOD BUILDING
McCloskey Company of Pittsburgh
Engineers · Builders



SUNSHINE STATE POTASH
A PRODUCT OF NEW MEXICO U.S.A.
REG. U. S. PAT. OFF.

HIGRADE MURIATE OF POTASH 62/63% K_2O
GRANULAR MURIATE OF POTASH 48/52% K_2O
MANURE SALTS 20% K_2O MIN.

is the promise of food for millions and a fair profit for the farmer. From shoat to slaughterhouse, hogs are fattened with prime feeds to produce top quality pork. The farmer uses his knowledge, the soil its strength, to put meat on the tables of the families of the world.

As the work of the farmer is repaid in profits, so must the efforts of the soil be repaid. For, from the soil comes strength for growing crops, the vital plant-food elements that nourish all life. And to the soil these elements must be restored.

Many of the most effective fertilizers contain POTASH, often Sunshine State Potash, a product of New Mexico. Potash adds vital food elements to the soil and helps strengthen crop resistance to drought and disease. Widely used, POTASH proves a valuable aid in producing bigger profits, proves a good business investment.

UNITED STATES POTASH COMPANY, Incorporated, 30 Rockefeller Plaza, New York 20, N. Y.

CALIFORNIA

Anaconda Copper two years ago bought from **Texas Gulf Sulphur** the **Leviathan** mine in Alpine county, and will soon have it producing 300 daily tons of sulphur ore, which will be used by the Anaconda copper leaching operation 12 miles away.

* * *

California Reduction and Fertilizer Co., Berkeley, have opened a new plant in Emeryville, handling meat by-products.

* * *

American Sulphur & Refining's Millmore plant is due to be at work in four months or so, producing 100 daily tons of 99.5% sulphur. Their first commercial plant, it cost about a million.

COLORADO

Farm Fertilizers, Inc., Omaha, Nebraska, announces the formation of a new company to be known as **Bennett Chemical Company.** This is a Colorado corporation and construction of a plant will start soon in Denver for the manufacture of fertilizer materials. The officers of this new company are: **Richard E. Bennett,** President; **Harry E. Judd,** Vice President and Secretary; **Robert W. Turner, Sr.,** Treasurer; and **Lyman S. Bennett**, Manager.

* * *

Western Mines Inc., Denver, have introduced a new packaged product known as Magnite, and sold as a natural soil conditioner and plant food, by the **Magma Corporation,** Chicago. The Governor, the Commissioner of Agriculture and the Controller of the fertilizer division of the State Agriculture Department all spoke at a luncheon, hailing the new product as "an important development in advancing the state's mining industry. **Roy Burkett** is president of Western; **Perry Halseth** is president and **Eugene Jaffe** is vice president of Magma.

Magnite is reported as containing basic plant foods, including NP&K with calcium, sulphur and magnesium in soluble form, and nitrogen-forming bacteria.

New Jersey Zinc is thinking about a $2,000,000 plant to produce triple superphosphate at Canon City.

FLORIDA

The F. S. Royster Guano Co., of Norfolk, Va., which has not been active in the Hillsborough-Polk phosphate fields for three decades, plans for the immediate construction of a triple super-phosphate plant near Mulberry to cost $3,000,000 or more, according to S. D. Gooch.

In our January issue we reported that the company was granted certificate of necessity to spend $3,031,000 on a new plant in this area.

Mr. Gooch said nothing about uranium by-product. He said it would be on property recently acquired by the company, that it would be on the Seaboard Air Line Railroad and will be named Royster. It is expected the plant, designed by **Knowles Associates,** New York, will be in operation early in 1954, and is expected to produce 70,000 annual tons.

Early in the century the company had extensive operations southwest of Bartow. The Bartow-Agricola highway is still known locally as the "Royster Road."

Ed Struve, of **Pomona Fertilizer,** Pomona, California writes asking to reprint Vernon Mount's last month message. He believes it might make farmers stop wanting the Government to "kiss them good night and tuck them in their little beds."

Although it is 30 years since the company was active in that section, it is still said to have extensive holdings of high grade rock in Polk County.

Royster operates 20 plants in 11 states—most of them in the South and Middle East.

* * *

International Minerals & Chemical plant at Bonnie, a near neighbor of the Royster plant, should be in operation as this is published. The plant cost nearly $14,000,000 and will consume 60,000 tons of sulphur annually which, it is reported, will come from Freeport Sulphur's Louisiana marsh operations. The acid plant began operations in January, and not only is there a good supply of sulphur on the ground, but a supply of sulfuric is ready for use.

* * *

Swift and Company found it necessary to issue a denial that they planned a $25,000,000 triple-superphosphate and uranium recovery plant near Lakeland. **H. P. Gould,** manager of their Bartow phosphate mining operation, says a rumor swept Lakeland to this effect, but he has no idea how it got started, and that it has no basis in fact.

* * *

The Camp Phosphate Company, Ocala, was the subject of a story in the local paper, which may be of interest to our readers:

"The Camp Phosphate Company which may be termed the parent company of the present Camp Industries, was incorporated by special act of the legislature of the State of Florida in the year 1899.

Nearly finished now is the great $50,000,000 plant at Sindri, India, which we have reported here as it developed. On a 350-acre site, work began in 1945, and the statistics are prodigious. Pandit Nehru officially opened it on March 2, 1952 though actual production had begun a year before.

"The purpose of this company was to carry on the phosphate mining business which had previously been conducted by **W. N. Camp.** The incorporators of the Camp Phosphate Company were W. N. Camp and his four sons, **Clarence Camp, Jack Camp, R. C. Camp,** and **W. N. Camp, Jr.**

"The assets incorporated in the company included several thousand acres of land situated in Columbia, Levy, Alachua, Marion, Citrus, Hernando, and Sumter counties, also seven phosphate plants which had been operated by W. N. Camp.

"The first offices of the company were at Albion in Levy county, where the initial mining was carried on. There the offices remained until about 1903, when they were moved to Ocala.

"By this time, the phosphate deposits in Levy county had been mined out, and the company began its mining operations in the Dunnellon area in Marion and Citrus counties. The Camp Phosphate Company continued to operate the phosphate mines until the year 1909, at which time W. N. Camp had retired from active participation in the business.

"His sons, Clarence and Jack Camp, who were then operating the phosphate mines, formed a partnership known as **C. & J. Camp.** This partnership operated the mines and paid a royalty to the Camp Phosphate Company on all rock mined and sold from lands of the Camp Phosphate Company.

"Since the time that C. & J. Camp began to operate the phosphate mines, the Camp Phosphate Company has not been active in mining phosphate but has continued to lease lands to C. & J. Camp and others for the purpose of mining phosphate rock.

"Camp Phosphate Company is still a land owning and leasing company, and the stock of the company is still owned by the heirs and families of the heirs of W. N. Camp.

"The officers of the Camp Phosphate Company are **Clarence Camp, II,** president; **Mrs. Leta Camp Davis,** vice president; **Mrs. Leta Fitch Austin,** vice president; and **R. E. Austin,** secretary-treasurer."

GEORGIA

Waynesboro Fertilizer, Waynesboro has completed a $100,000 expansion program, including a modern nitrogen system, error-proof electric scale hopper system with automatic weighing and sacking. Mechanized from car to door to delivery. **R. C. Neely** is president.

ILLINOIS

Interstate Fertilizer Co. plant in Cairo has been bought by **Darling and Co.** who are expected to ship in superphosphate from their East St. Louis operation, as the Interstate plant has no acid or acidulating facilities. It has a capacity of 25,000 annual tons.

* * *

Illinois Valley Supply Co., Carrollton, has installed a 30,000 tank for anhydrous ammonia, and will offer application service of fertilizer and pesticides. **Phillip Pohlman** is manager.

Effingham Equity, Effingham, has installed a 30,000 gallon anhydrous ammonia storage tank, and will supply custom application service when desired.

INDIANA

Fort Wayne has commissioned Purdue University to study a project of making fertilizer of the city garbage by composting. **Don E. Bloodgood,** professor of sanitary engineering, will direct the research. It is said that, while composting for digestion of waste is commonly practiced in England, no large scale operation of that kind has ever been completed in the United States.

KANSAS

Neosho Fertilizer Inc. has been established at Chanute with an authorized capital of $150,000, and a plan to build a plant with capacity reported as 5,000 annual tons. **Harry E. Davis,** now managing a plant at Lawrence, will become general manager.

The plant is expected to be 80 by 146 feet, with room for expansion. 8 to 12 will be employed.

The new company, it was pointed out, is home-grown and its formation was sparked by individual enterprise.

Shelton D. Propst was named president of the company. Other officers are: **Kenneth C. Keas,** first vice president; **William A. Sailors,** second vice president; **Mr. Briley,** secretary, and **James F. Cooper,** treasurer.

Directors are **Mr. Keas, Dee D. Mitchell, Mr. Davis, Ross E. Cooper, Mr. Cooper, Mr. Propst** and **Mr. Briley.**

* * *

Farm Fertilizers, Inc., Newton has been capitalized at $100,000. **Joseph J. McNerney** is listed as agent.

American Agricultural Chemical has announced the purchase of 25 acres about 12 miles west of Fort Dodge . . . and left us to draw our own conclusions!

KENTUCKY

International Minerals & Chemical is starting construction on an addition to their plant food plant at Somerset which will more than double its original size. Maurice Lockwood, in charge of the plant food division, tells us.

LOUISIANA

Anydrous Distributing Company of Tallulah, Inc. has been granted a charter listing $6,000 capital stock.

* * *

American Cyanamid's $55,000,000 ammonia plant above New Orleans is now expected to be completed by early 1954. It will be called the **Fortier Plant** in honor of the man to whom the land was originally deeded by Napoleon.

MAINE

Northern Chemical Industries, Searsport, had a story in the local press March 10, which is reproduced here because it is a demonstration of excellent public relations. Obviously written by the newspaper, not by a fertilizer man, it still incorporates many of the factors which make for good community relations—no smell, big investment in the community, employment for local people, deserving of community cooperation. Read it. And get your local papers to do likewise for you:

> "It will come as news to many that we now have a thriving chemical industry in Maine.
>
> It is the Northern Chemical Industries, Inc., located in the beautiful coastal town of Searsport. With its sister company, the Summers Fertilizer Company — the two operate side by side—it represents an investment of somewhere in the neighborhood of $1,500,000. The two employ from 100 to 140, depending upon the season.
>
> "Chemistry in its higher manifestations is over the head of the writer and it is assumed that the same is true of you, the average reader. Therefore the following of necessity will be written in simple terms, always hoping that simplicity will not lapse into vagueness.
>
> "The reason for the existence of the Northern Chemical Industries, Inc., is the enormous use of fertilizer in the state. In a normal year our farmers use close to a quarter of a million tons for which they pay in the neighborhood of $10,000,000.
>
> "When we think of fertilizer we think of an odorous stuff that you can smell 10 miles away against the wind. The commercial fertilizer in general use today, however, is an entirely mineral product that has virtually no smell.
>
> "The minerals from which fertilizer is made are phosphate rock from Florida, potash from New Mexico or abroad, bauxite, from British and Dutch Guiana, sulphur from Texas or Louisiana.
>
> "For the Summers Fertilizer Company and other Maine concerns these minerals are shipped by freighters to Searsport's magnificent deep water harbor.
>
> "Now phosphate rock in its natural state is useless for fertilizing purposes because it is insoluble. To make it so it must be mixed with sulphuric acid. The product of this marriage is superphosphate.
>
> "The key to the whole process of making fertilizer, then, is this same sulphuric acid which makes phosphate available as a plant food.
>
> "Heretofore, no sulphuric acid was made this side of Boston and so our fertilizer companies had to have it shipped in, a costly process, or else they bought superphosphate from some other fertilizer company.
>
> "In 1944 the Summers Fertilizer Company decided that it would like a nearby source of sulphuric acid and so an affiliate, the aforementioned Northern Chemical Industries, Inc., was established at its site in Searsport.
>
> "To operate efficiently it is desirable for the chemical company to make more sulphuric acid than the Summers Fertilizer Company can use and so other markets have been sought.
>
> "A principal buyer aside from other fertilizer companies are some of Maine's pulp and paper mills which use large quantities of the product in the process of turning wood into pulp.
>
> "The chemical company also makes alum for papermakers and, if markets develop, can make many other products from minerals used for fertilizer.
>
> "The presence in Maine of a chemical company of the size and scope of the Northern Chemical Industries, Inc., can well have favorable consequences for our state.
>
> "Many industries which we would like to have move to Maine use chemicals of one kind or another and the assurance of a good

supply close at hand can be the deciding factor in getting them.

"And of course, if another all out war comes a source of sulphuric acid close at hand will be of great value. Submarine raiding as well as the great burden placed upon railroads and trucking concerns makes transportation a grim problem as everyone in the nation found out last time.

"To decide to make its sizable investment in Maine took a lot of courage, initiative and faith on the part of the owners of the Northern Chemical Industries Inc. But that's the way things are done under our American system of free enterprise. The company deserves the cooperation and encouragement of all Maine citizens.

MARYLAND

Frazier Products of New York, have been given a contract to install a garbage composting plant at Hagerstown, which is expected to yield enough profit to cover garbage collections.

MASSACHUSETTS

Frazier Products is also negotiating with Springfield officials to install a garbage composting plant at that city. It would be located on Bondi's Island.

MISSISSIPPI

F. S. Royster has been given ODM approval for $458,000 to expand the sulphuric output of their plant at Jackson.

MISSOURI

Mathieson Chemical and the **Mississippi River Fuel Corporation** are reported as having joined forces to option 4,500 acres in DeSoto, and to be studying plans to erect there a fertilizer plant which is rumored to be a $30,000,000 operation. Local people are in awe of DeSoto High School students who recently completed a Planned Progress Report calling for a fertilizer plant in the area. The land under option includes a river landing, and is the focus of roads leading from the mining area of that vicinity.

NEBRASKA

National By-Products, Inc. of Des Moines expects to be in production with a plant in Fairbury by Fall. It will employ 25 and will be known as **National Fertilizer Company.**

NEW MEXICO

National Farmers Union is contemplating a plant in New Mexico. They own land near Carlsbad. It will be a $10,000,000 operation. Artesia has also been inspected as a possible site.

NEW YORK

Oswego Soy Products Corp., Oswego, has introduced a new plant food and soil conditioner named **Feralon**, containing FTE and antibiotics.

NORTH CAROLINA

Wilmington Terminal Warehouse, Wilmington, was the scene of a multi-million dollar fire March 9, with estimates ranging from 10 to 30 millions. 25,000 tons of nitrate of soda was in the fire, and included in the original loss figures, but this has been purchased by **Molony Fertilizer,** reconditioned and is on sale.

* * *

Nitrogen Division has purchased the **Synvar Southern Corp.** Greensboro.

* * *

Reliance Guano, Whiteville, has been purchased by **Southern States Phosphate & Fertilizer,** Savannah, Georgia.

OREGON

Chas. H. Lilly Co. is establishing anhydrous ammonia storage facilities at Albany, according to **C. F. Larsen,** president. A 40,000 gallon capacity and application equipment is to be installed. **Fenn Emerson** and **Otto Schell** will direct the operation which is in the heart of Oregon's famed Willamette Valley.

TENNESSEE

Shea Chemical, $3,500,000 development at Columbia, reported here just last month as going into operation, has already begun consideration of plans to double the capacity there.

* * *

International Minerals & Chemicals have completed purchase of the site near Clarksville where they plan a mixing plant to employ 40 to 50 people.

* * *

Virginia-Carolina expect that the additions to their Mt. Pleasant plant, under way since last November, will be completed by June.

TEXAS

Phillips Petroleum has announced construction of facilities to increase the present nitric acid capacity at the **Cactus Plant,** Etter, by 110 daily tons.

Present government-owned nitric acid facilities are operated under lease by **Phillips Chemical Company,** a wholly owned subsidiary. New construction will be owned and operated by the subsidiary company and is expected to be completed late this year.

The Chemical and Industrial Corporation of Cincinnati, Ohio is handling the process and design for Phillips under contract, and construction will be done by **Chemical Processes, Inc.,** a wholly owned subsidiary. **J. O. Brown,** superintendent of construction for Chemical Processes, is scheduled to arrive in Dumas, Tex., during the second week in March to start the building program.

The government-owned plant located at Etter, Tex., formerly known as Cactus Ordnance Works, was leased in 1948 by Phillips Chemical Company. At the time Phillips assumed operation, ammonia was the only fertilizer material being produced. Since then the company has doubled in size the ammonia pro-

duction capacity and nitric acid production facilities were installed with Phillips Chemical Company continuing to operate both under lease from the government. The company later installed an adjacent plant, which it owns and operates, to produce ammonium nitrate and nitrogen solutions.

The increased production of nitric acid will permit production of additional quantities of fertilizer in the solid form to meet the U. S. Department of Agriculture's priority of fertilizer requirements.

* * *

Phillips Chemical is asking Texas Railroad Commission OK on a plan to drill wells in the salt beds that underlie the Cactus Plant, make caverns by dissolving the salt, and inject ammonia. All this 2500 feet below ground.

* * *

Standard Sulphur, Rosenburg, is getting bids on its $450,000 plant at Damon Mound, a mining operation which should be completed by June.

* * *

Sunshine Plant Food Company, Clovis, will build a 60 x 100 foot plant to dispose of the accumulations of manure in the stockyard area there. The partnership is composed of **Bud Williams, Z. A. McCasland, Otto Smith, Ted Weldhauser, Don Gridley** and the **Clovis Cattle Commission Company.** A quarter section of land has already been purchased. 30,000 cattle have been fed within a 20-mile radius of the site this winter. The manure will be dehydrated and heat treated, pulverized and packaged in one to 10-pound bags.

* * *

San Antonio Fertilizer Co., San Antonio has been granted a charter, with paid in capital stock of $1,000. Incorporators: **Tom McCreless, George Grams** and **T. W. Wheeler.**

VIRGINIA

Baugh and Sons office safe was cracked March 1, but all the thieves got was $75 despite heavy manual labor of moving the safe and opening it with a mattock and hatchet found nearby. They did scatter office papers about, but **John Hardesty** says nothing else was lost.

WASHINGTON

Woods Industries, Inc., nine employees of **Crop King Company,** Yakima, have taken over the concern, retaining the Crop King name.

The business has approximately $500,000 in physical equipment and supplies. Officers are **Verle Woods,** president and general manager; **Olaf Arklund,** executive vice president in charge of irrigation division; **E. C. Cameron,** executive vice president in charge of air purification division; **A. R. Brewer,** secretary-treasurer and credit manager.

The company was bought from the founder, **Elon Gilbert,** by the above men in association with **Henry Hartner, David Ross, Edgar W. Smoth, Jack Stapleton** and **Arthur Thompson.** All were permanent company employees.

* * *

Stauffer Chemical Co. announces that a brand new chemical fertilizer containing ammoniacal nitrogen and phosphorous, will be manufactured at Tacoma. **Wilson & Geo. Meyer & Co.** will distribute the material. The plant is next to Stauffer's single superphosphate plant at Tacoma, and completion is scheduled for late this year.

The fertilizer is made by a process developed and patented by **Rumianca, Societa per Azioni** of Turin, Italy, and licensed exclusively in the U. S. to Stauffer. It will be offered to other producers in this country under sub-license.

The process can be varied to produce a granulated material contain-

ing between 5 per cent and 10 per cent of nitrogen and 10 per cent to 15 per cent of phosphoric acid. The exact composition of material to be produced at Tacoma will depend on the results of a market survey now under way.

WISCONSIN

Rockwell Lime Company have announced the opening of their new gas-fired rotary lime kiln at Rockwood, for the production of high quality dolomite lime.

WYOMING

Jefferson Lake Sulphur and **Gates Brothers,** have plans to recover sulphur from natural gas near Worland, and have formed a corporation for this purpose. As our readers know these two have previously teamed up in this manner.

AFRICA

South Africa's government expects production of their two million pound phosphate plant at Palabora by mid-1954. It should turn out to start some 56,000 annual tons of phosphate concentrated, but ultimate plans call for 450,000 annual tons.

AUSTRALIA

Simon Carves Pty. Ltd., Port Adelaide, have laid the foundations for the largest sulphuric acid plant in the world, to cost two million pounds, and to produce 100,000 annual tons of acid, from pyrites from Nairne in the Adelaide hills.

AUSTRIA

Oesterreichische Stickstoffwerke, Linz, produced 463,000 tons of lime ammonium nitrate in '52, compared with 436,000 the previous year. They estimate 500,000 tons for 1953.

BRAZIL

John Powell S. A. Commercio e Industria, Porto Alegre is the newest addition to Powell's growing manufacturing and distribution points.

Joining with Powell in the partnership arrangement are a prominent Brazilian firm, and a widely known American insecticide manufacturer. Operation of this Brazilian plant will be under the immediate supervision of **Edwin B. Twyman,** resident manager in Buenos Aires for John Powell and Company.

Installation of manufacturing facilities in the plant at Porto Alegre is already proceeding. A fundamental objective of the new company is to promote the manufacture of Brazilian raw materials. Another is to introduce to Brazilian manufacturers a line of basic insecticides or concentrates, primarily for the household and industrial fields.

The company will use its time-tested synergist Sesamin, as well as Piperonyl Butoxide and other materials, in conjunction with Pyrethrum, for the household and indus-

trial fields. This will include formulations for the Aerosol bomb, in which field Powell has done much pioneer research. These materials and concentrates will be merchandised under the John Powell trade mark "POWCO Brand" which has world-wide recognition and distribution among insecticide manufacturers.

* * *

National Sulphur Co. has opened its plant at Rio Maina, with production soon to reach 30 daily tons.

INDIA

Armour Research Foundation of Illinois Institute of Technology has just signed a three-year contract to reorganize and expand the **State Industrial Research Institute** of Burma in Rangoon. Signing of the contract was announced by **Dr. Haldon A. Leedy,** director of the Foundation.

Dr. Christopher E. Barthel, Jr., assistant director at the Foundation, will serve as resident director of the Burmese Institute, Dr. Leedy said. **P. B. W. Gollong,** International division supervisor at the Foundation, will fly to Burma shortly to make arrangements for Dr. Barthel's arrival.

"The principal objectives will be to train scientists, engineers, and technicians, and set up research and development programs on industrialization of agricultural products, the use of indigenous raw materials, and metallurgy," Dr. Leedy explained.

* * *

Pakistan's Industrial Development Corporation and the **Technical Cooperation Administration** are planning a 50,000 annual ton ammonium sulphate plant near Daudkhel, and a superphosphate and sulphuric acid plant at Lyallpur.

ITALY

Societa Industrie Chimiche Sintetiche is planning a fertilizer plant in Valdarno. When completed in 1954 it will produce ammonia and by-products.

* * *

Termodinamica Co. is building a furfural plant in Gioia Tauro, to be completed late this year.

JAPAN

Toyo Koatsu at Sunagawa, and **Konoshima Chemical** at Sakaide, are in production, test runs behind them, with their superphosphate plants.

MEXICO

Mexican Gulf Sulphur Co. has reported to its stockholders that substantial progress is being made in the erection of its new Frasch-Process plant on the Mexican isthmust of Tehuantepec and that it appears no further financing of the project will be required.

Paul Nachtman, company president said its recent $1.6 million credit from the Export-Import Bank —a $1.9 million loan was arranged last year—plus nearly $700,000 from "private sources" assures the company "of being in a position to carry on until revenue from sulfur sales is received."

He said the contractor believes the plant will be ready to start steaming the ground by about July 15. Full-scale production cannot be anticipated immediately, as a starting-up period, usually between one and three months, is required.

Mexican Gulf's reserves, Mr. Nachtman said, have been estimated as high as 900,000 long tons. Proven reserves are believed to be more than 2.8 million long tons.

TURKEY

Bid are coming in for a sulphuric acid and superphosphate plant at the Murgal copper smelter—an $8,000,000 project. A company has been set up to build a superphosphate plant at Iskenderun in which the **Fertilizer Corp. of America** is cooperating. And **Badische Anilin-und-Sodafabrik** is building an ammonium sulphate plant in Turkey.

Pacific Northwest Regional Conference

The new Wilson Compton Union Building at Washington State College, Pullman, will be the headquarters for the Fourth Annual Regional Fertilizer Conference of the Pacific-Northwest. It has ample facilities for making this meeting a very pleasant and interesting experience for everyone. At least three hundred people are expected to attend this Fourth Annual affair on June 30, July 1 and 2.

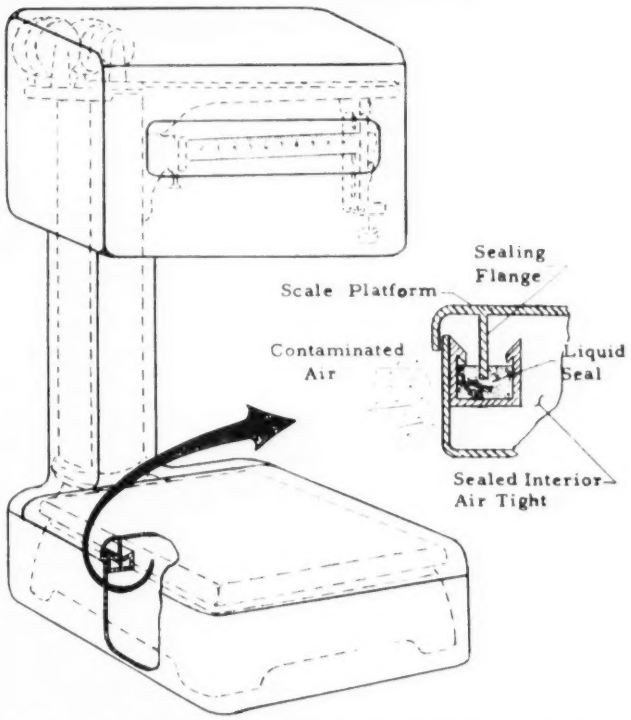
While the program is largely presented by the Soil Scientists of the region, well known speakers from across the United States and neighboring Canadian provinces will participate. The first day and a half will be devoted to timely soil fertility subjects and the economics of fertilizer usage in the region.

The second afternoon's program will acquaint the audience with the geology, soils, engineering aspects and the soil research of the newly developed Columbia Basin Project which brings nearly one million acres under irrigation during the 1950 decade. The last tour will be a tour of the Project. The special attractions will be a stop at the development farms where research is conducted and inspection of special engineering structures, a visit to Grand Coulee Dam and to the Washington Tree Fruit Experiment Station at Wenatchee.

A special pre-conference meeting on soil testing, tissue and foliar analysis and interpretation will be held on June 29th for research scientists and others interested in the technical phases of these problems.

Triangle To Sponsor Golf Tournament

J. E. McAuliffe, Founder and President of Triangle Conduit & Cable Co., Inc., New Brunswick, New Jersey, has announced that his company will sponsor a professional women's golf tournament, July 2, 3, 4, and 5, at the historically famous Shackamaxon Country Club, Westfield, New Jersey. The tournament, to be known as the Triangle Invitational Round Robin Tournament, will be an annual affair and will attract the nation's top-ranking women professionals—such stars as Patty Berg, the Bauer Sisters, Louise Suggs, Betsy Rawls, Betty Dodd, and many others, who will compete for a purse of $7500.00.



Applied Engineering Selling Cunningham Scale Seal

J. L. Cunningham recently licensed to Applied Engineering Company, Orangeburg, S. C., the exclusive right to manufacture and sell the Cunningham Scale Seal. A number of plants in the industry are familiar with this Seal and these concerns, as well as others in the industry, will be interested to know that this unit will be handled by Applied Engineering. According to its designer and manufacturer, Cunningham Scale Seal prolongs the life of scales to the extent thus far proven of 5-6 years without any appreciable amount of maintenance, an excellent record for use in a plant where corrosion, abrasive and dust conditions exist. Mr. Cunningham will be connected for at least a period of three years with Applied Engineering in an advisory capacity.

Personals . . .

James E. Totman, Summers Fertilizer president, returning with Mrs. Totman from a two months' trip abroad, writes us concerning fertilizer conditions as he found them during a Mediterranean cruise and business trip to Cairo, Madrid and Paris:

"In Western Europe, overproduction of certain fertilizer raw materials prevails. This seemed due in part to the rapid expansion of productive facilities plus a restricted domestic and export demand. Hope was expressed by some of the Superphosphate and Potash producers that Eastern Europe markets would shortly become available. A number of Superphosphate plants in Belgium and France are closed down completely and a heavy accumulation of Basic Slag, a by-product of the steel mills, is developing. Prewar, Eastern Germany, Poland and Czechoslovakia consumed substantial quantities of these items from Western Europe producers.

"Sulphuric Acid is also in surplus supply. A number of foreign areas formerly served by Europe are now producing, or about to produce, their own requirements. The overall picture, from the European's viewpoint, is therefore none too bright."

* * *

W. N. Watmough, Jr., Davison vice president in charge of mixed fertilizers, was interviewed by **Chemical Week** for their March 7 issue, and the story, with pictures of Bill — seven of them — occupied more than two pages. He told feelingly of the fertilizer maker's problems—with the peak load situation which develops every year, and the question of deciding whether to build for peak capacity of the future or not. They asked him what was being done to even out the farmer purchase pattern, and he told them the farmer buys when he's ready, and not before. Fall fertilizing for pastures he held out as a hopeful sign. The outlook? Upward. The surface is barely scratched. Farmers have learned they need fertilizer to make a profit.

An interesting interview, in Bill Watmough's most graphic language.

* * *

Kenneth R. Kerr has been promoted by **Fulton Bag & Cotton** to be assistant manager of their Denver plant replacing **Jack F. Ryan** who has been transferred to St. Louis, where he will be in charge of multiwall sales for that division.

* * *

Charles V. Carman joined the staff of **Kova Fertilizer,** Greensburg, Indiana, as assistant general manager, March 2. He was formerly with **Raymond Bag.**

* * *

William H. Mason has been appointed assistant to **H. A. Gray,** vice president in charge of sales for **Thurston Chemical,** Joplin, Missouri, according to word from President **William R. Thurston.** Mr. Mason has been in the fertilizer industry for 20 years, with **Naco** and **Smith-Douglass.**

* * *

R. B. Fuller, now manager of the Florida phosphate department of **International Minerals & Chemical,** will on July 1 become assistant to the vice president in charge of the Phosphate Division, reporting to **George W. Moyers.** His post will be filled by **F. B. Bowen,** now manager of the Tennessee phosphate department. President **Louis Ware** tells us Mr. Fuller has been with IM&M for 27 years, while Mr. Bowen joined them in 1926 and that **C. Lester Richards,** with them since 1945, will move into Mr. Bowen's spot.

* * *

W. A. Gale, a pioneer executive of **American Potash & Chemical** is moving from the Trona, California, home office where he has spent almost 30 years, to Whittier, California, where he will be in charge of developing and supervising the new research laboratory now nearing completion. **Julien Phillips** has become associate director of research and will take over the Trona laboratory.

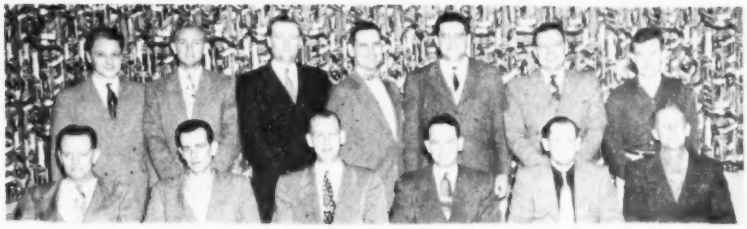
Research activities of the Eston Division will be transferred to **Whittier,** under the supervision of **W. D. Peterson,** assistant director of research, Eston division. Assistant directors **Frank May,** inorganic division and **Ernest Levens,** organic division will move to Whittier, as will **Harold Kerry,** in charge of the analytical section.

* * *

James D. Elgin has been made director of advertising and sales promotion for **National Gypsum Company,** Buffalo, New York.

J. W. "Bill" Jones, recently promoted to technical service representative, working in the Mid-South out of the Memphis office of Spencer Chemical.

Billy Mitchelson, North-Central district, left, and A. B. Beasley, Mid-South district, who are two new district agronomists on the staff of Spencer Chemical. Both have excellent educational backgrounds and good experience. Mr. Beasley will live in Memphis, while Mr. Mitchelson will live in Minneapolis.



Pictured above is the group at Joplin general offices which attended Thurston Chemical Company's three-day meeting for supervisory personnel from their Atlas, Tulsa, Lawrence and Trenton plants. Seated, left to right are: F. C. Moore, superintendent Tulsa plant; J. W. Lampe, superintendent, Lawrence plant; O. M. Walstad, Atlas plant manager; J. E. Reynolds, Jr., assistant vice president; J. R. Bass, superintendent, Trenton plant; H. R. Rackley, superintendent, Atlas plant. Standing, left to right, are: L. W. Woodiwiss, personnel manager; B. W. Crow, assistant superintendent, Atlas chemical section; J. A. Doyle, superintendent, Atlas chemical section; R. J. Hughes, Engineer, Atlas plant; J. E. Wyatt, assistant superintendent, Atlas fertilizer section; T. N. Roberts, Jr., assistant production superintendent, Tulsa, Lawrence and Trenton plants; D. E. Warren, chief chemist.

Albert H. Clem has been promoted to general sales manager of Pennsalt, filling the post left vacant by the recent death of **Russell S. Roeller.** He joined them in 1938.

* * *

Dr. Elmer H. Schulz has become director of research, and **Dr. Maurice J. Day** has become assistant director at **Armour Research Foundation.**

* * *

Mrs. M. Eugene Lewis is the new office secretary at **CFA.**

* * *

John B. Whitney, consultant for a group of Americans working for the development of the fertilizer industry in Turkey, says this is the first time in the history of that country that outside capital has been permitted to control 51% of the investment. (See Around the Map, Turkey)

* * *

R. L. Zachry has been promoted to Director of Quality Control Division, and will be succeeded by **Clarence C. Chavous** as general superintendent. **Norman W. Touchette** is Director of Research on new products. **James D. Evans** has joined the New Orleans Division sales force.

Dr. L. Gordon Utter, is in charge of all technical service work on the expanding line of organic agricultural chemicals being developed by **Diamond Alkali. Albert F. Fuchs** has become assistant sales manager, handling pesticide sales in the Southeast. **H. E. Meadows** is technical sales representative in the Southwest on pesticides. These changes were announced by **J. G. Brunton** sales vice-president.

* * *

E. C. Horn, who formerly handled fertilizer sales, St. Louis office, will be in charge of **Bradley & Baker's** new Indianapolis office. **James K. Sparkman, Jr.,** will be Houston, Texas representative, also a new office. **Thomas C. White** will replace Mr. Horne in their St. Louis office, to handle fertilizer sales in the area west of the Mississippi.

* * *

James A. Schoenstein has been appointed sales representative in the Texas area of the Southern division of **Arkell and Smiths,** manufacturer of paper bags. Mr. Schoenstein has replaced **W. F. Nesbit** who was recently appointed Eastern division sales manager with headquarters in New York.

Arthur R. Cahill, who has been elected assistant treasurer of International Minerals & Chemical Corporation, on the staff of Robert P. Resch, vice-president and treasurer.

Paul F. Steinhoff, who has been made director of chemical engineering in the Atlanta office of John J. Harte Company, where his principal duties will be to coordinate sales and engineering.

E. M. "Woody" Woodrich, who has recently joined Chase Bag to handle the Oklahoma territory. The appointment was announced by J. P. Falconer, Dallas office manager.

Henry B. Dawson, Jr., who has been appointed by Arkell & Smiths to be their sales representative in the Southern Division, working out of the office at Mobile, Alabama.

G. A. "Al" Martin, who has become special sales representative for Hammond Bag & Paper, in Michigan, Ohio, Kentucky and Southern West Virginia, working out of Wellsburg, W. Va.

MARKETS

ORGANICS: Interest in Organics for fertilizer use is spotty and the producers of domestic Nitrogenous Tankage are heavily sold at $4.55 to $5.00 per unit of Ammonia, f.o.b. shipping point. Very little imported Nitrogenous is offered.

CASTOR POMACE: Supply is limited and domestic price is $37.25 in burlap bags/paper bags, seller's option, f.o.b. Northeastern production point with $2.00 per ton allowance if shipment is made in paper bags. Imported offerings are light at $36.50 to $43.00 exvessel Atlantic ports, depending on quality.

DRIED BLOOD: Unground Dried Blood, in bulk, at Chicago continues at around $5.25/$5.50 per unit of Ammonia and the New York market is approximately $5.00 per unit.

POTASH: Demand is increasing and movement reaching more normal proportion. No change in price has been noted. Very little imported material is offered.

GROUND COTTON BUR ASH: Primarily in the form of Carbonate of Potash, is available for prompt and future shipment at prices near the delivered price of Domestic Sulphate of Potash for which the demand is quite keen as supplies of Sulphate of Potash are not plentiful.

PHOSPHATE ROCK: Market continues firm and high grade Rock continues in tight supply position.

SUPERPHOSPHATE: Demand is increasing strongly but stocks are in good proportion to the demand. Prices remain firm at around old ceiling levels.

FERTILIZER TAX TAG SALES AND REPORTED SHIPMENTS
(In Thousands of Equivalent Short Tons)
Compiled by THE NATIONAL FERTILIZER ASSOCIATION

STATE	February 1953	February 1952	January 1953	January 1952	Oct.-Nov.-Dec. 1952	Oct.-Nov.-Dec. 1951	July-February 1952-53	July-February 1951-52
Virginia					100	111		
N. Carolina			163	232	197	223	450	549
S. Carolina	192	164	121	129	145	189	349	388
Georgia	144	106	82	82	222	200	378	334
Florida	175	136	153	162	421	398	775	712
Alabama			78	107	108	145	317	335
Tennessee	33	43	187	20	74	184	158	228
Arkansas	28	30	17	18	37	42	89	82
Louisiana	26	40	24	29	57	38	119	97
Texas	63	71	39	58	108	143	243	280
Oklahoma			6	11	15	26	78	75
Total South	661	590	701	848	1,484	1,649	2,951	3,080
Indiana	140	90	165	155	285	287	700	639
Missouri	107	84	58	66	145	128	454	357
Total Midwest	247	174	228	221	480	410	1,154	996
California					168	194		
Total Other					168	194		
Grand Total	908	764	924	1,069	2,082	2,253	4,105	4,076

R—Revised

SULPHATE OF AMMONIA: Demand continues strong with limited stocks of imported material at several ports.

AMMONIUM NITRATE: Demand far exceeds supply and prices are firm.

NITRATE OF SODA: It is reported approximately 25,000 tons of Chilean Nitrate of Soda were destroyed in a fire at Wilmington, N. C. earlier this month which will tighten the supply situation for the state of North Carolina and states served by Wilmington. No change in domestic or imported Soda prices has been announced.

CALCIUM AMMONIUM NITRATE: This form of Nitrogen testing 20.5 per cent is in good demand and vessels periodically arriving are usually sold out shortly before arrival. Price is $51.25 per ton in bags, f.o.b. cars at port of discharge. One importer is completely sold up on his production.

GENERAL: Mixed fertilizers in the Southeast are beginning to move in greater volume after a much delayed season. Shortages of various ingredients such as Sulphate of Potash, Nitrogen, and Triple Superphosphate are developing.

PERSONALS

(Continued from page 77)

George F. Cech of St. Louis is product sales manager for garden and agricultural chemicals marketed by Monsanto Chemical Company's merchandising division.

In the field of PESTICIDES

NAC CONVENTION

The members of the National Agricultural Chemicals Association met March 11-13 at the Jung Hotel, New Orleans, to discuss the special problems which lie ahead of them this season, and to plan for the long-range progress of the industry. We present extracts of special interest to the fertilizer industry, taken from talks made by leading authorities:

President Arthur W. Mohr keynoted with the fact that the loss of crop values because of pest attacks is estimated at 13 billion dollars annually. "Doesn't it make sense?" he asked, "for a farmer to fully protect his crop, especially in time of low farm prices, so he has a chance to make a profit?" He followed this question with an urgent plea for the industry to educate the farmer, and cited various specific examples of net gain through pest control.

Mr. Mohr forecast an unprofitable year for his industry because capacity is high and much greater than demand, which is holding prices down. "Profits if any will be meager" he said, explaining that he would much rather say something pleasant but had to be realistic.

In the absence of Avery S. Hoyt, Chief of the Bureau of Entomology and Plant Quarantine, his paper was read by Assistant Bureau Chief D. H. L. Haller. The paper was devoted largely to a discussion of the resistances built up by major pests to pesticides, which he described as "the modern entomoligical headache." Not limited to flies and mosquitos, the problem embraces a broad front of insect pests, and "we don't know just how long present still remarkably effective, will coninsecticidal controls, most of them tinue to help."

E. C. McClintic, traffic vice president of the Pure Carbonic Company, said that most manufacturers do not realize that there is a vacant chair at their executive meetings which should be filled by a transportation executive. "The supervision of transportation service demands the constant attention of a specialist" he insisted, giving examples of many instances by which a traffic department can save the company money in a time when transportation is more complex than it has been since the interstate commerce laws were enacted in 1887.

R. J. Kowal, of the USDA laboratory at Gulport went into the field of pest control in forests, and the great need for research in this field. Epidemics of the pine bark beetle and a pine defoliator have resulted in a loss of at least 140,000,000 board feet of southern timber, valued at about $4,200,000 he said.

Dr. Charles E. Palm, president of the Entomological Society of America, told the chemical manufacturers that "through pest control, there is a real opportunity to contribute toward the solution of fundamental sociological problems behind world unrest."

Dr. Palm is in charge of the department of Entomology of Cornell University of Ithaca, New York. He reported on several tours he made to study pest problems of agriculture and public health in Canada, Central America and fourteen European countries.

He predicted that in the future an even greater demand will be placed on science to supply the materials needed for support of the increasing population of the world. He pointed out that there are no territorial boundaries within the free world on the exchange of scientific information; even though the availability of particular products may be regulated by economics and trade barriers.

"Science fortunately does not recognize the political boundaries that may be forced upon its products," he asserted.

As for the use of agriculture chemicals in this country, Dr. Palm told members of the Association that "without the important accomplishments that have come from your industry, American agriculture, and, in turn, the American public would certainly suffer staggering losses from insects and diseases."

Dr. Palm drew a comparison between the countries which he visited and the United States. "The American farmer has a better individual understanding of pest control problems than any farmer in the world," he stated. He attributed this understanding largely to the educational programs of Land Grant Colleges Extension services and the chemical industry of this country.

Low Price Krilium Formulation Announced

A new formulation of Krilium soil conditioner, a liquid which may be used for prevention of soil crusting in agriculture at a cost as low as $5 per acre has been announced by Roy L. Brandenburger, general manager of Monsanto Chemical Company's Merchandising Division.

Georgia AES Bulletin Covers Weed Control

An excellent and thorough bulletin on chemical weed control has been issued by the Georgia Experiment Station, Experiment, Georgia, written by S. V. Stacy, E. S. Hagood, Ray Hodges and J. G. Futral, listed as Press Bulletin 643, and giving the results of experiments, and the methods found most practical for application of herbicides.

Monsanto Film Explains Conditioners

The availability of a new film which describes the use and function of synthetic chemical soil conditioners has been announced by Mosanto Chemical Company.

Entitled "Garden-Wise," the film is a sequel to "Soil Structure: Key to Productivity," an earlier movie which described the development and applications of Krilium soil conditioner. Prints of "Garden-Wise" may be obtained by writing the Merchandising Division, Monsanto Chemical Company, St. Louis 4 Missouri.

Diamond Alkali Renames Kolker

Diamond Alkali Company announced today that the name of its subsidiary, Kolker Chemical Works, Inc., a New Jersey Corporation, has been changed to Diamond Alkali Organic Chemicals Division, Inc.

Diamond purchased the Kolker concern in August of 1951 as part of its expansion program in the organic chemicals field. The subsidiary has plants at Newark, N. J., and Houston, Tex., which manufacture a wide range of organic chemicals for agriculture and industry.

Aldrin Accepted For Wireworm Control On Potatoes

Aldrin, the insecticide already used extensively against many major farm pests, has now been granted official label acceptance for control of wireworms on Irish potatoes by the United States Department of Agriculture. Announcement was made in Denver by F. W. Hatch, manager of the Julius Hyman & Company Division of Shell Chemical Corporation.

New Trichlorobenzenes For Herbicides

A new group of high purity chemicals was announced recently by A. B. Chadwick, president of the Solvay Process Division, Allied Chemical & Dye Corporation. Resulting from the successful operation by Solvay's Research organization of a unique pilot plant for the separation of pure isomers, these three new products are 1, 2, 3-trichlorobenzene, 1, 2, 4-trichlorobenzene and 1, 3, 5-trichlorobenzene. Solvay is now in position to offer these products in experimental quantities with a purity range of 99 per cent or better.

Hercules Reports On New Toxaphene Form

A new form of toxaphene has been proved successful in early tests, and appears promising for control of hitherto hard-to-kill insect pests, including several species which feed below the soil's surface.

Physical form of the new type of toxaphene is granular, the grains being approximately the size of clover seed. When applied to such crops as corn or sorghum, the granules do not cling to foliage, but fall into the whorls where budworms and armyworms are feeding, or onto the soil at the base of the plants to control cutworms, clinch bugs, and non-climbing insect pests.

Work conducted at the South Carolina Experiment Station at Clemson on granular insecticides indicates that toxaphene is effective in reducing crop losses from soil infesting insect pests if the granular material is worked into the soil. Further experiments on granular toxaphene will be conducted during 1953 in important farm areas of the United States.

The technical base for toxaphene insecticides is produced by Hercules Powder Company.

USDA Reports on Compounds

Seven new compounds that hold unusual promise as chemical weed killers for use in major crops are reported by plant scientists of the U. S. Department of Agriculture. Before the new chemicals are recommended to farmers for widespread use, however, both fundamental and applied research studies under field conditions are needed to determine their proper use.

Potentials of the compounds were demonstrated this past year in an evaluation project conducted by Dr. W. C. Shaw and C. R. Swanson at Plant Industry Station, Beltsville, Md.

Using materials supplied by the chemical industry, the scientists studied the effects of more than 300 compounds in controlling grasses and broadleaved weeds in 30 different crops.

Five of the compounds—all carbamate derivatives—show excellent promise as pre-emergence treatments for control of weeds in cotton, soybeans, and other crops. The compounds are: isopropyl N-(3) methyphenyl) carbamate, isopropyl N-(3-chloro-6-methyl phenyl) carbamate; isopropyl N-(3-chloro-6-methoxyphenyl) carbamate, sec butyl N-phenyl carbamate, and sec butyl N-(3-chlorophenyl) carbamate.

CLASSIFIED ADVERTISING

For Sale, Exchange and Wanted Advertisements, same type now used, EIGHT CENTS a word for one insertion; TWELVE CENTS a word for two insertions; FIFTEEN CENTS a word for three insertions, and FOUR CENTS a word for each insertion more than three; ADVERTISEMENTS FOR THIS COLUMN MUST BE PAID IN ADVANCE.

WANTED CHEMIST: Position open for analytical chemist in fertilizer control laboratory. Prominent mid-western company. Send qualifications to Box 41, c o Commercial Fertilizer, 75 Third St., N. W., Atlanta, Ga.

WANTED TO PURCHASE: Fertilizer plant, dry mixing, or acidulation. Box #37, c o Commercial Fertilizer, 75 Third St., NW., Atlanta, Ga.

FOR SALE: One Model HA Hough Pay Loader good condition. DORCHESTER FERTILIZER COMPANY, CAMBRIDGE, MD.

WANTED: Plant managers job in state of Illinois or adjoining states, over 15 years experience in field of fertilizer, Box #43, Commercial Fertilizer, 75 Third St., N. W. Atlanta, Ga.

Position available — Superintendent, Mixed Fertilizer Plant. Deep South, preferably with acidulating experience. Salary in proportion to ability. Box #91, c/o Commercial Fertilizer, 75 Third St. N. W., Atlanta, Ga.

FOR SALE: ROTARY DRYERS FOR GRANULATION. 2-7′ x 60′ Rotary Kilns. These make excellent heavy duty long life direct heat Rotary Dryers by installing lifting flights. Other Rotary Dryers in stock: 8′ x 54′, 6′ x 42′, 5′ x 40′, 4′6″ x 35′, 4′ x 30′ and 3′ x 50′. Send us your inquiries for Jaw, Gyratory and Roll Crushers, Ribbon and Drum Mixers, Pulverizers, Bucket Elevators, Hammer Mills, Vibrating Screens, Belt Conveyors. We buy your idle machinery. Our 36th year. CONSOLIDATED PRODUCTS COMPANY, INC., 14 PARK ROW, NEW YORK 38, N. Y.

OPPORTUNITY
SALES EXECUTIVE

Agricultural and
Industrial Chemicals

Require man with sound business training, age 32-42 to handle position of responsibility with old established distributor of agricultural and industrial chemicals. Education and experience in agricultural chemical field plus sales and executive ability essential. Salary open. Please send complete information on education, business experience, present salary level, age, references, photo. Box 42 c o Commercial Fertilizer, 75 3rd St. N.W., Atlanta, Ga.

LAW & COMPANY

Founded 1903

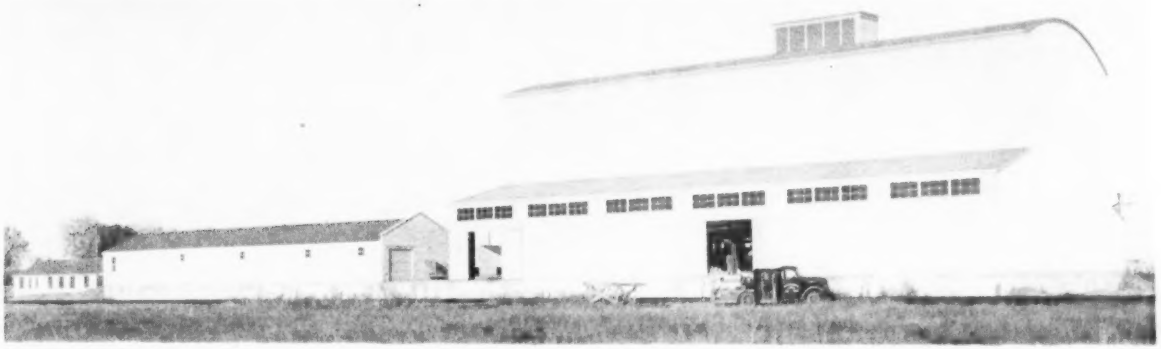
FERTILIZER CHEMISTS

Two Convenient Laboratories

P. O. Box 1558
Atlanta, Ga.

P. O. Box 629
Wilmington, N. C.

Lincoln Service & Supply, Inc. Grand Island, Nebraska, whose new plant is illustrated below, was formed in 1946 and began operations in an old Army base warehouse in 1948. By 1951 sales had grown to the point that a new plant was needed, and this one was built. It is of steel construction, with the main building 120 by 90 feet, 45 feet high. It has a storage capacity of 6000 bulk tons. Runways on either side of storage bins permit entry from both sides, an unusual feature. There is also a warehouse for bagged storage, a shop building and an office building. The plant capacity is 25,000 annual tons. Officers are Howard L. Peterson, president; Gilles L. Downey, secretary; Sam Spahr, vice president for retail; B. F. Backlund, sales vice president.



Aquafil Nevada Plant Soon Complete

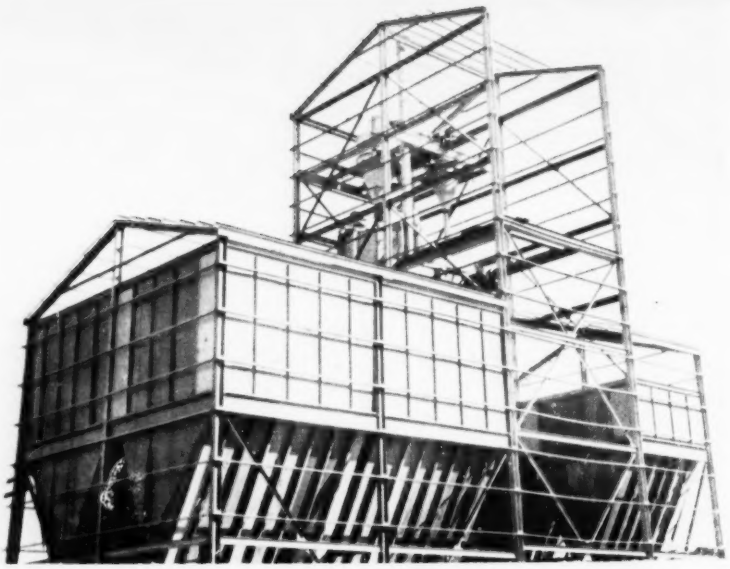
Construction work is nearing completion on the Aquafil Company's new diatomaceous plant at Fernley, Nevada. When both sections of the new plant are in operation, they will comprise the largest diatomaceous earth plant in the United States, according to Otto A. Kohl, Aquafil president. The plant is being built in two separate and independent sections, each capable of production without the other.

This new plant is located next to Aquafil's present plant in Fernley. Adjacent to the largest level deposits of diatomaceous earth on the North American continent, the plant's capacity will be 200 cars a month. A push-button plant in almost every respect, it is designed for a constant 24-hour production pattern without interruption. Every modern control device is used in this plant to assure product control of very exacting specifications.

Aquafil has been producing diatomaceous earth for over ten years, largely for the poultry industry. However, having a large volume, low-costing deposits, Aquafil is now specializing in the large volume fields of industry where this type of diatomaceous earth is in such growing demand. Diatomaceous earth has always been used in the past for filtering purposes. Recently, it has become widely used in many industries for other purposes: as a covering agent for Ammonium Nitrate; as a diluent in the Insecticide industry; as a conditioning agent in commercial fertilizer; as an inert in the insulation and other fields. Its uses are growing daily and it is fast becoming a much needed product by many American businesses.

Mr. Kohl stated, "We have developed this new plant to serve those phases of industry which have a need for this particular type of diatomaceous earth. Where a company needs this type of earth for their manufacturing process, we believe that we now have the finest producing facilities in the world."

The company headquarters are located in Cedar Rapids, Iowa.



OBITUARIES

Albert F. Burgess, Sr., 79, noted entomologist and moth authority, active since 1895, with USDA since 1907, died February 23 in Brattleboro after several years of failing health.

Daniel H. Cannon, secretary-treasurer of A. D. Adair and McCarty Brothers, Atlanta, with whom he had been associated for 34 years, died at his home March 15.

Wiley Byron Coarsey, 82, one of the co-founders of what is now The Gulf Fertilizer Company, died January 11 at his home after many years of ill health.

Dean Emeritus M. J. Funchess, 68, of Auburn, and the AES, who served Alabama agriculture for 40 years, retiring in 1950, died February 19 at Auburn.

Harry H. Holleson, 70, former vice president of Synthetic Nitrogen Products, who resigned from that post only last November due to ill health, died January 26 at his New York home.

R. J. Lakey, 33, vice president and chief engineer of Shea Chemical's, Columbia, Tennessee plant, died February 27 when his car ran off a bridge near Columbia.

Anthony R. McNamara, vice president of Eagle Rock Lime, Rockland, Maine, with which he had been associated since 1905, died February 11 at his home in Rockland.

Robert A. Reichard, Sr., 78, founder and president of Robert A. Reichard, Inc., Allentown, Pennsylvania, and of the 500-acre Schoeneck Farms, died March 7 at his home in Allentown after several months of ill health.

George V. Savitz, 65, New York district manager for agricultural potash sales of International Minerals, and Chemical, and with them for 37 years, died suddenly January 15 at Carlsbad, New Mexico, of a heart attack.

Dean L. Smith, Superintendent of V-C's Portsmouth, Va. plant and with them for 36 years, died March 5 after a serious illness.

Harry R. Schneitman, 69, manager of the Farmers Fertilizing Works, Elizabethtown, Pennsylvania, died January 22.

S. Otto Voyles, 81, founder of the Calumet Fertilizer Company, in 1913, and president until 1926 when it was taken over by the Tennessee Corporation, died March 12 at his home in New Albany, Kentucky.

Abraham Mazer, 77 founder and chairman of the board of Hudson Pulp & Paper Corp., died March 27th, at his home in New York City after a prolonged illness.

DOWD PRESS, INC., CHARLOTTE, N. C.

• *Population trends*

With more people moving from the farms to join their cousins in the cities, American agriculture is facing the necessity of growing more food with less manpower. A recent survey claims that by 1975 our food requirements will be 25% greater than at present.

Potash Company of America, a prime producer, is proud of its contribution in materials and service, in support of the fertilizer industry's aid to our growing farm economy.

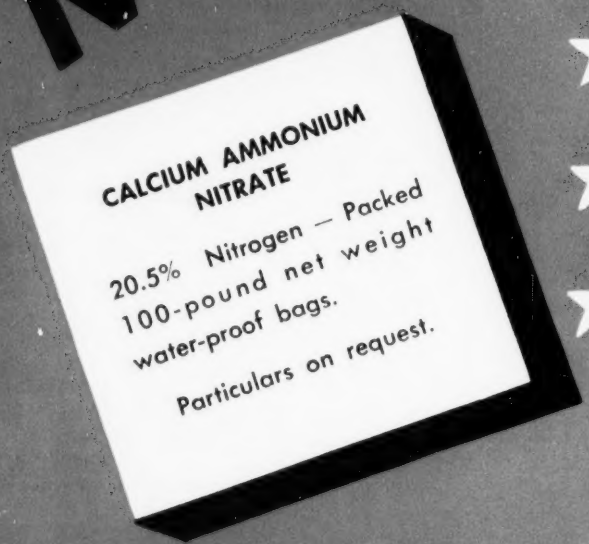
POTASH COMPANY OF AMERICA
Carlsbad, New Mexico

GENERAL SALES OFFICE . . . 1625 Eye Street, N.W., Washington, D. C.
MIDWESTERN SALES OFFICE . . . First National Bank Bldg., Peoria, Ill.
SOUTHERN SALES OFFICE . . . Candler Building, Atlanta, Ga.

FERTILIZER MATERIALS

FOREIGN AND DOMESTIC

- INSECTICIDAL AND INDUSTRIAL CHEMICALS
- SULPHATE OF AMMONIA
- ORGANIC AMMONIATES
- SULPHUR & POTASH



EXCLUSIVE DISTRIBUTORS FOR DUVAL SULPHUR AND POTASH COMPANY

VEGETABLE OIL MEALS & FEEDSTUFFS

ASHCRAFT-WILKINSON CO.

Home Office
ATLANTA, GEORGIA

Cable Address
ASHCRAFT

Norfolk, Va.
Charleston, S. C.

Tampa, Fla.

Jackson, Miss.
Columbus, Ohio